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The Health Bulletin

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Vol. 64

JANUARY, 1949

No. 1



Paul Pressley McCain, M. D.

1884-1946

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The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

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The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, North Carolina.

Prenatal Care	Baby's Daily Schedule
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Infant Care	Seven and Eight Months
The Prevention of Infantile Diarrhea	Nine Months to One Year
Breast Feeding	One to Two Years
Table of Heights and Weights	Two to Six Years
	Instructions for North Carolina Midwives

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JOHN H. HAMILTON, M.D., Acting Editor

TRIBUTE PAID TO LATE DR. PAUL P. McCAIN

A portrait of the late Dr. Paul P. McCain was unveiled in the lobby of the main building of the Sanatorium at dedication ceremonies on Tuesday, December 7. The portrait, a gift of the State Medical Society, was unveiled by Sarah Johnson McCollum, only granddaughter of Dr. McCain, and daughter of Mr. and Mrs. N. M. McCollum of Leaksville, North Carolina.

Dr. Paul F. Whitaker, chairman of the McCain Memorial Committee of the State Medical Society, presided over the dedication ceremony and presented Justice Wiley Rutledge of the United States Supreme Court, who delivered the dedication address.

Mrs. Paul McCain, wife of the late Dr. McCain, was the guest of honor at

the ceremonies. Other members of the family present were: John McCain of Chapel Hill; Mrs. N. M. McCollum, of Leaksville; Dr. Irene McCain McFarland, of Philadelphia; and Miss Jane Todd McCain, student at Agnes Scott College in Georgia, all children of Dr. and Mrs. McCain; and Mr. Charles McCain of Birmingham, Alabama, brother of Dr. McCain.

The portrait was painted by Frank Benson of the National Art Galleries in New York City. A bronze plaque beneath the portrait has the inscription, "In loving memory of Paul Pressly McCain, A.B., M.D., F.A.C.P., LL.D., 1884-1946; Guardian of Public Health, Warrior against tuberculosis, beloved physician and friend of man, follower of the Great Physician."

INTRODUCTION OF JUSTICE RUTLEDGE

BY PAUL F. WHITAKER, M. D., CHAIRMAN
McCain Memorial Committee
Medical Society of the State of N. C.
Kinston, North Carolina

Ladies and gentlemen, members of the family and friends of Dr. McCain, members of the Medical Society of the State of North Carolina, members of the Sanatorium Board, members of the Woman's Auxiliary and distinguished guests:—As Chairman of the McCain Memorial Committee of our Medical Society, appointed by President Robertson, I am privileged and honored to

have a small part in this occasion which honors the memory of a beloved colleague who lived so fully and so usefully. As most of us know the portrait to be presented today was made possible by the membership of the North Carolina profession, who loved, honored and respected Paul McCain.

I am sure that as your representative on this occasion, you would want me to

express thanks to a number of people who have had a part in the eventuation and consummation of this memorial. To Dr. Donald Koonce, and the other members of his Committee who raised funds, and to every member of our Society who contributed, we are grateful. To President Robertson and Secretary McMillan our Committee expresses appreciation for their cooperation and support. To Dr. Stuart Willis, Superintendent of the Sanatorium, Mr. Charles Cannon of the Sanatorium Board, and to Mrs. McCain who met and advised with us often, we are also grateful. And finally to Dr. Coppridge and Dr. Hubbard, the other members of your Committee, who have so generously given their time, their efforts and their thoughts, I express both personal and official thanks. I assure you that this memorial has been a labor of love for all concerned, and that we are happy and grateful to have had this experience.

It is neither my purpose nor my assignment to eulogize the memory of our departed colleague. We have with us a distinguished visitor who is privileged to honor himself and us, by this assignment. Suffice it for me to say that all of us loved and honored Paul McCain, and that we are gathered here today to pay humble tribute to his memory, and to his warm and generous spirit. I know of no citizen who served his State more usefully. I know of no man who lived more beautifully than he did. I know of no man who was more devoted to truth, and I know of no man who was more filled with human

kindness which is the essence of goodness, than was he. Certainly his multiple accomplishments and his immortal spirit will be projected forever into the future service of mankind.

It is now my privilege and honor to present the distinguished guest and speaker for this occasion. He was born in the State of Kentucky. He graduated at the University of Wisconsin. He spent a part of his boyhood in the beautiful Carolina country around Asheville. He travelled to the far West, and lived for a time in New Mexico. He is a man who overcame disease and physical handicap to obtain his present high position. Many accomplishments too numerous to enumerate have marked his life. He was a successful lawyer and an able teacher. He served as Dean of the Law School of Washington University, and was also Dean of the University of Iowa. He was appointed by the late, President Roosevelt, to the United States Circuit Court of Appeals, and at present he is a member of the highest and greatest tribunal in our blessed and mighty Nation, and last, but not least, he was a friend and former patient of Paul McCain. At this very busy and exacting period in this year of his life, he has taken time from his manifold responsibilities to honor us with his presence here today, and to pay tribute to the memory of one whom he, like us, loved and respected so much. We are grateful for his presence. I am honored and privileged to present to you a distinguished and useful leader and citizen, Mr. Justice Wiley Rutledge of the Supreme Court of the United States.

PAUL P. McCain

BY MR. JUSTICE WILEY RUTLEDGE
United States Supreme Court
Washington, D. C.

"Greater love hath no man than this, that a man lay down his life for his friend." John XV, 13. These words aptly describe the life and the death of Paul McCain. That is true in the sense of

their more literal and usual understanding. His life was taken away suddenly and too early when and because he was about his business of saving the lives of others. As truly as the man who

loses his life in some crisis by a heroic surrender to rescue another, he made his own sacrifice.

But the words of our text have another, a deeper and truer meaning. It does not detract from the heroism, the courage, or the spontaneous unselfishness of him who leaps suddenly and sacrificially to the aid of one endangered. But the text applies as well, I think, to one who gives his life, not merely at its end, but his whole life to the saving of others! This, too, Paul McCain did. He fulfilled the text in both of its meanings. Few do.

In speaking of another who has saved one's life, or had a large hand in doing so, it is more appropriate to speak with honest and sincere restraint than fulsomely. For such words come too easily and no words can repay the debt. In common with most of you here and thousands of others, I stand under this debt and this duty.

It was thirty-two years last July since I first came to this place and to Paul McCain's ministry. Then it was just well begun. I came fearfully, seriously stricken in body, downcast in mind and hope. Then in the early twenties, I learned that it is hard for the young especially, with all of life before them, to face slow death, worse perhaps to stand in dread of lingering illness and pain.

I do not wish to make this tribute merely a personal history. But I cannot forbear to say two or three things out of an experience which can only have been one in common with thousands of others, indeed with all who became his patients during his long and devoted career.

His ministry, for it was such, was threefold, of the mind, the heart and the soul. In those days there were some three hundred patients. Each received his personal attention and on a personal basis. None was merely "a case." Even then highly skilled in his professional art, he inspired complete confidence. If there was help for the stricken body in the field of his specialization, he could give it. But his aid was never given

coldly, with mere efficiency. Scrupulously honest, he gave the patient the facts painstakingly and most often fully. This of itself inspired confidence.

Beyond his skill and integrity, he knew that the patient's state of mind was quite as important to his recovery or well-being as his physical state. His effort was always to alleviate fears where this could be honestly done and, in any case, to bring composure. Without apparent effort, though it cost him much in time and energy, he created in each person a sense of understanding and courage. Where there was room for hope, he gave it.

It was due largely to his influence that "The San," as we then called it, became a place of cheerfulness, not of despondency, and of courage among even the far-advanced. I remember with what surprise I so shortly discovered this, after being sentenced as I had thought by one of his friends, Dr. Pritchard of the Battle Creek Sanitarium, to a term of months if not years or the remainder of my life in an institution hardly less attractive than a prison.

In this connection, I cannot forbear to mention his wife, always to me Sadie, her father (then the Superintendent) and her mother. For they too aided him constantly in his work of building hope and courage in all sorts of ways. Often they would accompany him on his daily rounds of the wards, to which every patient looked forward. They too brought hope, encouragement, and personalized interest.

Finally, Paul McCain was deeply religious, but in no narrow sense. All felt and understood this. All were influenced by it. He was thus the ideal physician, healer, comforter, inspirer, friend. It would be hard to say in which of these aspects of his art he excelled.

* * * *

Paul McCain was a pioneer in the field of public medicine. North Carolina has been a forerunner among our states in two great things. One has been public education, the other public medicine.

Even in the days of "Reconstruction",

the vision of a great North Carolina leader foresaw that amid all the consequences of defeat and ensuing poverty the true and lasting reconstruction must come from the people of the state themselves, not from the outside. The state caught his vision and followed it, slowly at first but with increasing momentum as the years passed.

I paused to pay tribute in this connection, not comprehensively but only by way of illustration, to one phase of the state's achievement flowing out of this policy. I mean the creation of your system of higher public education and especially the truly distinguished University of North Carolina.

Its pre-eminence is not so much in grounds and buildings or physical assets, for there are many other universities which equal or excel it in these respects. But the greatness of a university is found in its spirit. The soul of an institution marks it with distinction or the lack of it. I know of no state university and of few if any private ones, which have succeeded as have your own in creating and maintaining the traditions of free inquiry and free expression. Without these no university can avoid in some part that tyranny over the mind of man which Jefferson denounced as alien to the free spirit of man himself and of democratic institutions. That you have created such a place of learning, wisdom and creative freedom is due not only to the founders of your general policy in public education. It flows also from the fact that you have selected a succession of great leaders, including the University's present president, who have stressed the independence of the mind and the spirit, and that you have followed their leadership.

Beginning much later, but still well in the forefront of the states, you have gone far in developing your system of public medicine. The day when tuberculosis was wholly a private misfortune, to be remedied if at all only by the means available to the stricken person, has gone for North Carolina. Would that this could be said for all of our states! That outmoded idea is in essence

but a policy of spreading the disease. For unfortunately it is true still, as it always has been in fact, that the great majority of people contracting it have not, and cannot get, the means which will at once remove the certainty of their infecting others and give them the chance of recovery.

The same thing is true of all communicable diseases, more particularly of those requiring extended periods for rest or cure. One ill with such a disease and without resources to protect himself and others is a menace to all with whom he comes in contact. Throughout your state and others rows of tombstones in family lots, showing whole families wiped out in short periods of years, prove this. The thing is so obvious, indeed, that it needs no proof.

Yet, even in North Carolina with its early start, the real beginning in this field did not come until about the second decade of this century. It arrived almost half a century after your real beginning in education. Perhaps this shows how slow is the ripening of the fruit of that tree. But it shows also that fruit will be borne, once the tree is planted, and that the two plantings and bearings are not disconnected.

Since your beginning in public medicine, you have made great strides forward. The growth of this institution and the foundation of others like it in the intervening years, simply show what can and will be done, once the necessity for meeting this public menace is recognized and the program to meet it gets under way.

How much more humane, how much more conservative in the true sense of the word, is such a policy. For lives which otherwise would be cut off, most often early, with the loss of all they might produce if salvaged, even in earnings and taxes (to put the matter at the lowest level), are saved, and restored to productivity as well as to happiness.

Among all the trends of our day toward mass devaluation and destruction of human life, our people are still our greatest asset. The conservation of hu-

man life has become our greatest necessity.

In all of your progress in this direction until his death, Paul McCain was pioneer and leader. To this cause his whole life was given, quietly, unostentatiously and, if I knew him, without thought of money or fame, only to serve his people and mankind.

Thus he also was public servant. That his work was not finished does not mean it has ended. He has built foundations for a structure that will rise higher and spread more widely by force of the momentum he has created in others which cannot recede or subside. His work will last and will grow as long

as North Carolina and the nation live.

It is fitting for this building to be dedicated by the State in his name and to his memory.

The likeness presented today by his professional associates cannot take his place. But it will be a constant reminder of him and his work, a continuing inspiration to others to carry on and to expand that work in accordance with the people's need and the public necessity.

I am grateful for having the privilege, by participating today, of acknowledging my personal debt and of paying tribute to this public servant.

ACCEPTANCE OF PORTRAIT OF DOCTOR PAUL MCCAIN

BY PAUL H. RINGER, M. D.
604 Medical Building
Asheville, N. C.

LADIES AND GENTLEMEN:

It is a matter of sadness and pleasure for me to utter the few words that I have to say—sadness, because this portrait brings before me with great poignancy the memory of my dear old friend; and pleasure, because I am able once again to pay tribute to one I loved so well.

This is an excellent portrait. The artist is to be congratulated upon having seized and shown so many of Paul McCain's characteristics—his humility, his shyness, his whimsiness, his transparent honesty, his charm:

"And thus he bore without abuse
The grand old name of Gentleman.
Defamed by every charlatan
And soiled with all ignoble use."

It is fitting that this portrait should hang in the lobby of this building so recently dedicated to his memory, this lobby through which he passed countless thousands of times, going through it to his work, coming out of it often to go to receive new and always un-

sought honors which were thrust upon him from all sides. North Carolina will not long remember what we say here, but North Carolina can never forget what he did here. It is also fitting that this portrait should hang in this lobby so that former patients returning for a visit, patients in the Sanatorium and new arrivals, shall down the years be able to look at the likeness of the one who made this institution and who, during his incumbency, hovered over his charges whom he sought with all his might to help in their fight for health. Fearless, faithful and true, he shrank from no duty which honor and right, as he saw them, demanded but faced every task with the strenuous energy of a true man and the noble honesty of a true gentleman. Loving, he was beloved, his presence was a joy and an encouragement; absent, he is a never-failing memory. And so, on behalf of myself and my colleagues on the board of directors of the North Carolina Sanatoria for Tuberculosis, I gratefully accept this portrait of Paul Pressley McCain.

THE HEALTH DEPARTMENT AND THE FOOD OF THE PEOPLE*

CHAIRMAN'S ADDRESS

ROBERT H. RILEY, M. D.
Baltimore

It is difficult indeed adequately to express how deeply I appreciate the honor of presiding over this section. For many years, bearing various names and under the chairmanship of a long list of distinguished physicians, the annual meeting of this group have afforded a valuable opportunity for those engaged in the administration of official health agencies and those engaged in the practice of preventive medicine to meet together for a discussion of the problems which confront them both.

During the period of my connection with this section, the fields of preventive medicine and public health have moved forward so rapidly that only those of us whose service covers a period of more than one or two decades can recognize how far we have come. Every field of human knowledge, with the possible exception of mathematics, has made more scientific and technologic progress in the last few decades than during the whole of previous history, and public health and preventive medicine have contributed more than their full share in this development. This new knowledge has resulted in profound alterations in the way of life of the human being, and the contribution of preventive medicine to these changes has been most important of all.

It is my purpose at this time, however, to discuss developments in only

one small sector of the whole field of public health, that of human nutrition. In that field I shall try to review the changes which have already occurred and to look forward to the problems with which the future is pregnant, so far as they can now be foreseen.

The changes in human food habits during the last three decades have been so rapid, so profound and so powerful in their actual and potential effect on the well-being of the race that they should be far better understood than is now the case. Some of us here can, for example, remember when the food supply of the nation was in large part produced within a few miles of the place of its consumption. Some have, in fact, loaded a sack of corn on the back of a horse or mule and ridden with it to the grist mill and then watched the grain poured into the hopper and in a moment seen the meal running smoothly back into the sack from which the corn had just been poured. I can't remember when the fruits and vegetables on sale in the larger cities were almost all produced on nearby farms. They were brought to the markets of the city and there sold to the consumer by the farmers who had themselves grown and harvested them. Tropical fruits were a great luxury, available, except to the very rich, only on very special occasions.

The supply of milk was from varied sources and was wholly unregulated. Many families in the cities kept one or two cows for their own supply and sold the surplus to their neighbors over the back fence. These one-cow dealers, as they were called, were a problem of serious moment in the early campaigns of milk sanitation. For the rest, the public supply of milk was in great part produced in small dairies located with-

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Director, State of Maryland Department of Health.

Read before the Section on Preventive Medicine and Public Health at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 24, 1948.

in the city itself, or in the nearby suburbs, and sold by the producer from his own wagon as he made the daily rounds of his customers. Meat was also a local product, from animals killed in slaughter houses within the community and sold as soon as possible after slaughter.

A few foods had of course always come from distant sources; sugar, molasses, spices and condiments were articles of ocean commerce for centuries. The opening of the West moved the center of the nation's grain supply and of milling to west of the Mississippi. The preservation of fruits and vegetables by heating and sealing has a long history. The first experiments were made in France during the Napoleonic Wars, and actual industrial canning began in the United States in 1819. It was the perfection of this process that really began the revolution in food habits.

But with these exceptions, the mass of the food of our fathers and grandfathers was produced close to the place of its consumption and was subjected to the simplest and most necessary processing only.

We can, it is true, remember those early days without nostalgic longing for their return. The vegetables produced on nearby farms were not always of good quality and except for cabbage and turnips were available only for a brief season each year. The milk was dirty, of poor keeping quality and not infrequently dangerous. The meat was tough and stringy, and even its relative cheapness was not adequate consolation for its poor quality. Fruits were limited in amount and were, except for apples, available only for a short period each year. To those who lived in those parts of the country where corn-bread was a staple diet, it is only the corn meal of the old days the disappearance of which is to be regretted.

About the time when Benjamin Harrison became President of the United States, the tremendous increase in the population of the cities began to produce changes in the production and

distribution of the food supplies of the nation. The invention of roller mills had made possible the production of flour of more agreeable appearance than was possible under older methods, and this flour rapidly drove from the market the product of the smaller local mills.

Similarly, the production of range cattle in the far West resulted in the establishment of great centers for the slaughter of cattle and in the development of methods for the shipment of meat and meat products to distant consumers. When "western beef," as it was called, was first introduced in the markets of the eastern cities, it was regarded with considerable disfavor. Consumers imagined that they could taste the preservatives which they wrongly believed had been used to make its shipment possible. In the beginning only its lower price commended it to the public.

The crowding of the cities made it impossible to continue to produce an adequate amount of milk within or near the city limits, and technologic methods were devised for shipping milk long distances. Successfully to manage this business required the creation of large corporations and the development of depots for collecting milk in rural areas and for distributing it in the cities. The use of refrigerated cars for the shipment of meat led quickly to the shipment of citrus fruits and vegetables in the same way. It was soon found profitable to raise each fruit or vegetable in that part of the country where climate and soil were most favorable to its production, and although market gardens near the cities have never quite disappeared, the great bulk of fruit and vegetable production was moved to areas far distant from the places of maximum consumption.

These changes were the inevitable result of the advances in horticulture, in food technology and in transportation, and without them the development of our present civilization could not have taken place. They brought, however, certain dangers to the health

of the people, which made necessary the development of systems of protection of equal complexity. The most pressing were, of course, those connected with the production and distribution of milk. It was not difficult for the large corporations which engaged in the business of collecting and distributing milk to produce a product far cleaner and of better keeping quality than that coming from the neighborhood dairies of the past. However, the mingling of milk coming from many cows and its distribution by the larger companies to thousands or even hundreds of thousands of persons brought dangers which had previously not existed. The occasional infection of these large supplies of milk and milk products gave rise from time to time to epidemics involving thousands of cases of typhoid, scarlet fever and septic sore throat. The shipment of meat and of certain other products led to the use of preservatives, not all of which were entirely innocuous. The great commercial orchards and truck farms began to use insecticides in large quantities, and some of these were highly toxic and at least potentially dangerous to the health of those habitually using products in the growth of which these poisons had been employed.

The health departments of the nation reacted promptly and, in general, effectively to the challenge of these new conditions. The almost complete control of bovine tuberculosis, the inspection of all establishments where milk and its products were produced, distributed or sold and the enactment of ordinances requiring pasteurization of public milk supplies soon resulted in so safeguarding most of the nation's supply of milk that the dangers of wide distribution were almost completely controlled. The improved safety and quality resulted in a large increase in the consumption of milk, and a most significant contribution was thus made to the public health.

It was indeed fortunate that the federal government entered the field of food control soon after the beginning of this period of great change. Its first

activities were in connection with meat inspection. Foreign countries threatened to interdict the shipment to them of American meat products, because of the fact that a large proportion of the pork shipped abroad at that time was found to be trichinous. It had not been deemed necessary to inspect pork products in the United States, since it was the habit in America to cook pork long enough to insure the destruction of trichinae. To meet this situation, the federal government established a system of inspection for meat slaughtered in the larger abattoirs of the country and destined for shipment overseas. It was not long before this inspection was extended to meat shipped interstate in the United States.

In the very first years of the twentieth century, Dr. Harvey W. Wiley, then the Chief of the Bureau of Chemistry of the United States Department of Agriculture, interested himself in the question of the adulteration of foods shipped in interstate commerce. Although Dr. Wiley was a man of extraordinary energy and courage, it was only after many years of effort that he succeeded in securing the passage of the Federal Food and Drug Act of 1906. The conditions which this act was designed to correct were not for the most part tremendously important by modern standards, but it was an exceedingly fortunate thing that the act itself was passed and that standards of purity and freedom from deleterious substances of our food supply were established and enforced by the federal government.

The passage of the federal act was followed, as is so often the case, by parallel legislation on the part of the states. Many of the state laws passed at this time, however, placed the enforcement of the whole system of food control in the hands of the department of agriculture rather than that of health. This fact, together with the long failure of the older city departments of health to develop adequate and effective systems of food inspection, gave food sanitation so low a

position in the minds of the public health profession that it has even now not received the recognition it deserves. The demonstration about this same time of the tremendous importance of the accessory food factors in the nutrition of human beings and domestic animals and the widespread popularization of the facts have tended still more to obscure the importance of continuous, complete and effective control of all those foodstuffs which are processed in any way before reaching the ultimate consumer.

There is certainly no need in this company to review the arguments for an improvement in the diet of our people. The new knowledge of the importance of vitamins and of certain mineral substances to health and physical vigor is now known to all intelligent persons in every civilized country. The task remaining is to apply this knowledge to those who have not yet been reached by the flood of propaganda on the subject which has been poured forth in recent years. The success of the British government in maintaining the health of its whole people and in actually improving the physical status of its children during the late war, in the face of serious shortages of many foods, is proof positive of the need for the better utilization of the abundant food supplies of this country and in particular of the enormous importance of insuring to every expectant mother and every growing child a diet which in amount and content will make possible the fullest and most healthful development. This is the unfinished task in nutrition.

There are still, however, unfinished tasks in connection with the safety and sanitary quality of our food supply. The war waged by our growers of foods of all sorts on their insect enemies is never won, and it will probably continue as long as there are both human beings and insects on this little planet. Modern transportation is being utilized as well by the insect as by the human population of the earth, and new pests are constantly appearing in areas where

they had not before been known. In this war, new weapons are constantly being developed and the old weapons are used in steadily increasing amounts. It was not very many years ago that arsenic began to be used as a spray for apples. The danger that the average citizen would receive a toxic amount of arsenic was not at first sufficiently serious to give rise to much concern. Since this early beginning, however, it has proved necessary to use arsenic in the commercial production of one after another of our fruits and vegetables, and the danger to the consumer is thus constantly increasing. It seems probable that insecticides free from toxicity to human beings will in time replace the present dangerous substances. It will always be necessary, however, for the health department to protect the interests of the individual consumer who has no means of knowing the danger to which he is subjected and is always poorly represented when any question of legislation is under consideration.

When the replacement of the original Federal Food and Drugs Act by what is now called the Federal Food, Drug and Cosmetic Act was pending before the Congress of the United States, the interests of the public were presented to the committee by the representative of the Federal Food and Drug Administration, whose motives were plainly suspect of the committee, and by the three physicians who were called "the three professors," who appeared voluntarily as witnesses in behalf of the bill. In opposition were several hundred lawyers, lobbyists and technicians of the various food-producing and processing interests involved. Each one of these paid lobbyists was fully aware of the effect of the bill on the interests of his own client and was prepared to expend all the time, energy and money necessary to protect those interests. No administrative health officer appeared at these hearings.

What has been said about insecticides applies equally to a wide variety of other chemical substances which have

been developed and which are now being used in the processing of food on a commercial scale. Until Mellanby's demonstration of the fact that flour treated with nitrogen trichloride, the so-called "agene," produced hysteria in dogs, few if any even of our best informed health officers were aware of the fact that a large proportion of all flour now sold on the American market is treated with this powerful chemical agent. There is as yet, of course, no evidence that the "agenizing" of flour has produced any ill effects on our human population, but Mellanby's observations have been confirmed and extended in this country, and no one as yet knows the effect on human beings of the prolonged and regular use of "agenized" flour, or whether or not there will be remote and serious results from its occasional use by so large a part of the population.

"Agene" is very much in the limelight at the moment, but it is by no means the only substance used in this country in the processing of flour. Chlorine, nitrosyl Chloride, benzoyl peroxide and the oxides of nitrogen are all used for bleaching flour and for additional aging effect. Potassium bromate is used as a conditioner, to make the flour easier to handle and to produce loaves of greater volume than is possible without the addition of this agent. Sodium bicarbonate, calcium phosphate and sodium acid pyrophosphate are also added to certain flours to produce one or another effect.

In the processing of evaporated milk, disodium phosphate, sodium citrate and calcium chloride are used as stabilizers. In the making of cream cheeses, gum karaya, gum tragacanth, carob bean gum, gelatin and algin are used to prevent the leakage of moisture from the product. In the making of preserves, jams and jellies, lactic, malic and tartaric acids are used to increase the acidity of the product and sodium citrate and potassium tartrate are used as buffer salts to prevent its too rapid jelling. This list of products now regularly in such use could be extended

to great length, and, in addition, a large number of new products are now being used experimentally. It should be made clear that up to this time there is no evidence that any of these substances is known unfavorably to affect the health of consumers of the product. The Food and Drug Administration has actively interested itself in the subject and has formulated stringent regulations for controlling the use of all such substances.

Surely it would seem that this situation should be a source of concern to every state and local health officer in this country and that the efforts of the federal government to control it should be aided and encouraged in every possible way. When it is proposed to use a new substance of this kind, the representatives of the food industry are at once mobilized and every possible scrap of evidence in favor of the use of the product is assembled and presented to the official agency. The millions of consumers whose health is placed in possible danger have no knowledge of the fact that their interests are in jeopardy and no means by which these interests can be represented. This important field deserves far more attention at the hands of all health officers than it has up to now received.

The nation's food is more than ever, therefore, the concern and responsibility of our health officials. Its control has passed far beyond the condemning of spoiled meats, fruits and vegetables and making perfunctory inspections of restaurants. These classic functions must, of course, continue to be performed and should be done as well as our existing facilities make possible. There is, however, another and higher duty which we must recognize and another responsibility we must assume, and that is to make sure that in the enormous business of producing, processing and distributing the food supply of our great population, the interest of the consumer and particularly the health of the consumer must always come before the convenience or the profit of those who supply it.

NARRATIVE REPORT

A. C. BULLA, M.D., *Health Officer*
City of Raleigh and Wake County

January 10, 1949

Growing up to be a human being is not the hazardous and perplexing problem today as it has been in the past due largely to the progress made in research, health education, better maternity and infancy care, and the application of known proven preventive measures against sickness and suffering.

The infant, the child, the adolescent is an ever changing individual within himself, and, too, his environment is forever changing. In considering the growth and development of the human being during his formative period, we are first concerned about his heredity and his birth which determine to a large extent the kind of individual he may be. We are concerned about his environment which include all his surroundings, his family, his home, his teachers—every living thing, and every given situation no matter how small, simple, and insignificant. It takes all these things plus intelligent guidance with care and the application of all the benefits that have come down to us in the past to make it possible for an infant born today to live out his full days of expectancy and reach the average life expectancy of 66 years with as little sickness and suffering as possible.

Life is the adjustment of exterior and interior relations. In other words, the external battling against the internal. This constant adjustment and re-adjustment is the process of living. A child is more than a biological organism; he is also a social being growing and adapting himself to specific environments. Yes, he is a part of heredity and environment. Yes, he is made up of hereditary tendencies and the environment in which he grows and develops. He cannot escape these vital influences and forces.

The road he must travel from infancy to old age is not in all cases an easy one, but it is straighter, easier, and more

certain than the roads traveled 20-10-5 years ago. He has the advantage of new and useful tools which scientific research has provided. These scientific preventive and curative agents are today the most useful agents for the protection of life and the relief of sickness and suffering that have ever been given to man. They have not and will not solve all of the medical and public health problems that we are confronted with today, but they have given new hope to this and other generations.

The application of vaccines and sera for the prevention of disease is a dynamic science. This has been true from the day they were discovered down to the present time. It is the duty of physicians and health departments to see that the public receives these preventive measures in that age group in which they are most effective. The public should always be mindful of the fact that these preventive measures cannot be effective unless it accepts them and uses them to the greatest capacity, which means that no infant or child should be allowed to go unprotected against those diseases for which there are proven vaccines and sera to prevent their occurrence.

We have seen the number of communicable diseases grow smaller and smaller and the death rate from all causes reduced from 11.2 in 1937 to 7.7 in 1948. The infant death rate per 1000 live births in 1937 was 83.9 and in 1948 it was 31.3—a decrease of 52.6. This is worthy of note: in 1937, 55 percent of infant deaths occurred under one month of age, and in 1948, 70 percent occurred under one month of age. Notwithstanding this fact and that measures are now being instituted to try to reduce this high percentage of infant deaths occurring during the first month of life, as stated above, the death rate in the first year of life has been reduced from 83.9

in 1937 to 31.3 in 1948. This means that this large reduction in the infant death rate was from the end of the first month of life to the end of the twelfth month of life.

Prematurity is responsible for approximately 53 per cent of the deaths occurring in the first month of life. A program for the entire state under the Division of Maternity and Infancy, directed by Dr. G. M. Cooper, is being worked out whereby premature infants may receive premature care in the best regulated hospitals of the state.

The maternal death rate per 1000 live births has been reduced from a rate of 7.0 in 1937 to 1.5 in 1948—a decrease of 5.5.

We have seen the number of births increase from 1977 in 1934 to 3517 in 1948. The number of white births has increased from 1098 in 1934 to 2345 in 1948. The number of colored births has increased from 879 in 1934 to 1172 in 1948.

The following figures show the comparative attendance of births by physicians for the years 1934 and 1948:

City of Raleigh Residents

Yr.	Total	Per cent	White	Per cent	Color-	Per cent
1948	1457	95.5	1067	100.0	390	83.8
1934	515	75.4	389	100.0	126	42.9
Gain		20.1		----		40.9

The comparative figures for hospital deliveries:

Yr.	Total	Per cent	White	Per cent	Color-	Per cent
1948	1446	94.9	1063	99.6	383	82.2
1934	322	47.1	269	69.1	53	18.0
Gain		47.8		30.5		64.2

Wake County Residents						
Yr.	Total	Per cent	White	Per cent	Color-	Per cent
1948	1507	89.0	1012	99.0	495	73.8
1934	929	72.0	668	95.8	261	44.4
Gain		17.0		3.2		29.4
1948	915	53.8	753	73.6	162	24.4
1934	85	6.5	68	9.6	17	2.8
Gain		47.3		63.0		21.6

These figures, I feel, are significant and speak for progress — using Governor Kerr Scott's term "going forward."

I have referred briefly to some of the progress made in maternity and infancy in Raleigh and Wake County over a period of 15 years. This one step of the many that have been taken during the past thirty years in providing maternity and infancy care, the reduction of maternal and infancy death rates, the big increase in hospital deliveries, and high percentage of deliveries by physicians is most gratifying.

There are many other problems and perhaps I would put first the complete eradication of the communicable diseases. We know today that they are under control but we must now speak in terms of eradication. This applies to tuberculosis and the venereal diseases as well as to those diseases for which there are vaccines and sera.

Along with better care of the expectant mother and the infant, we must always emphasize the health needs of the preschool child. To me, the preschool child is a very important person. We have seen progress in this direction but we must continue to emphasize the needs of the preschool child until every child who enters school does so free of damaging physical defects which may handicap him physically and mentally. This comes within the meaning of a comprehensive school health program.

The proper supervision of food and food-handling establishments is always important and more and more the public is not only demanding better health supervision but is critical of managers of food-handling establishments who for one reason or another permit their places to become undesirable ones in which good food should be prepared and served. More and more the public is going to demand well located and clean food-handling establishments in which the managers feel a personal responsibility for the condition of their places and the welfare of the public. This is a process of education plus capital—both of which are important in maintaining a high rating which the public looks forward to as a guide to service.

Lack of attention to personal hygiene

and sanitation, I think, are two of the outstanding problems that still confront every health department in this state. Improvement in this direction is largely influenced by knowledge of what is right from what is wrong, together with

that powerful influence of education. The personal habits of an individual may be termed as a personal thing. His environment may or may not be so termed, but both are vital to health and happiness.

BLOOD DERIVATIVES IMPORTANT FOR MEDICINE, RESEARCH

Fractionation of blood is providing important products with which physicians can treat disease and investigators can obtain a better understanding of the functions of the human body, according to a Harvard physician.

Writing in the current (Nov. 20) issue of *The Journal of the American Medical Association*, Charles A. Janeway, M.D., from the Department of Pediatrics, Harvard Medical School and the Children's Medical Center, Boston, reports that breaking up blood into specific components also effects a great economy in using blood donations.

Because a function of the blood is concentrated in each fraction, donations which in the form of whole blood could be used to treat only 20 patients can be used as blood derivatives to treat over 200 patients, he points out.

Another important consideration, Dr. Janeway says, is that many of the blood components undergo rapid deterioration in whole blood. Separated and concentrated, each may be packaged in a state best adapted to the preservation of its functional activity, ready for clinical use whenever and wherever it is needed.

During the Army-Navy-Red Cross blood program of World War II, slightly more than two million blood donations were subjected to fractionation, yielding products which were used in part by the armed forces. Surplus products were returned to the American people.

Certain derivatives—plasma, fraction I, fibrin foam, fibrin film, gamma globulin, isohemagglutinins, and serum albumin—have been established as valuable agents in the treatment of disease, Dr. Janeway explains.

Some of the products are important for research. For example, one protein which has been crystallized from a fraction of human plasma—the fluid portion of the blood before clotting has occurred—accounts for the capacity of the plasma to transport iron. Isolation of this protein in pure form has made it possible to study its reactions with iron in the laboratory and to make parallel observations in patients.

Transmission of jaundice through infected pooled blood or pooled blood products is a serious problem. Dr. Janeway indicates that this problem may be overcome by the sterilization of blood and blood plasma on a large scale. Although mass processing with ultraviolet irradiation has not yet proved successful, there is enough evidence of its effectiveness to justify optimism, he says.

Methods introduced for the separation of half the plasma protein, serum albumin, from the remaining proteins can be used to obtain all the major components of plasma. Such methods have also been applied to the purification of virus vaccines, toxoids, animal serums, and tissue extracts.

The value of plasma as an emergency blood substitute in the treatment of shock due to blood loss is well established.

Sixty-five per cent of the protein of fraction I is fibrinogen, a substance which is used in attaching skin grafts and in removing kidney stones. Fraction I also contains other proteins, including antiemophilic globulin, so-called because it will rectify the coagulation defect in hemophilia, an inherited condition.

Fibrin is a whitish protein which forms the essential part of a blood clot. It is used in two forms: a foam to prevent bleeding in surgery and an elastic film substitute for the outer covering of the brain in neurosurgery.

Gamma globulin—fraction II—is of value in the prevention and modification of disease. Its use in the prevention of measles has become a standard public health practice, according to Dr. Janeway. It is valuable in preventing infectious jaundice, and is being investigated for use against scarlet fever and German measles. Gamma globulin obtained from the blood of patients convalescing from mumps and whooping cough is used against these diseases.

Isohemagglutinins are substances which cause the blood cells of other members of the same species to collect into clumps. Certain isohemagglutinins obtained as part of the fractionation

procedure are used in testing for blood grouping and for Rh sensitization.

Serum albumin was originally developed as a blood substitute for emergency treatment of shock in the wounded. It is extremely effective in conditions which may develop from severe infections, burns, peritonitis, or abdominal operations. It has a place in the treatment of kidney disease and cirrhosis of the liver. Its use for patients who have had brain injuries or operations is under study.

Red cells contain the most important blood protein, hemoglobin, which is responsible for the vital function of oxygen transport. Red cell suspensions, especially prepared concentrated products, are useful in the treatment of anemia of all types, except those due to acute blood loss or severe infection. They supply hemoglobin, and a relatively large dose can be given safely without overloading the circulation.

THE KENFIELD MEMORIAL FUND

AMERICAN HEARING SOCIETY
817 14th Street, N. W.
Washington 5, D. C.

A sum of money was subscribed in 1937 in memory of Miss Coralie N. Kenfield of San Francisco, California, a teacher who was known throughout the United States for her high ideals and advanced methods in teaching lip reading. This money was placed in the Kenfield Memorial Fund. The interest provides a scholarship known as the Coralie Noyes Kenfield Scholarship for Teachers' Training Courses for Teachers of Hard of Hearing Adults. (The scholarship offered in 1949 is \$100.00). The American Hearing Society is the trustee of the Kenfield Memorial Fund.

Applications will be considered from any prospective **hard of hearing** teacher of lip reading to hard of hearing adults who lives in the United States and who can meet the following requirements:

A. Personal characteristics necessary for successful teaching.

B. Ability to read lips as certified upon examination by an approved instructor in lip reading.

C. A bachelor's degree, or
Two years of college work plus twelve semester hours of work in adult education, psychology of the handicapped, voice production and control, sight conservation, social service, or
Two years of successful experience in teaching in public or private schools, plus twelve semester hours of work in adult education, psychology of the handicapped, voice production and control, social service, or kindred subjects.

Applications must be filed between March 1, 1949 and May 1, 1949, with:
Miss Rose V. Feilbach,
Teachers Committee,
American Hearing Society.



The

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CAMPBELL HALL, N. C.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
Chickenpox	Influenza	Tuberculosis
Diabetes	Malaria	Typhoid Fever
Diphtheria	Measles	Venereal Diseases
Don't Spit Placards	Padiculosis	Vitamins
Endemic Typhus	Pellagra	Typhoid Placards
Flies	Residential Sewage	Water Supplies
Fly Placards	Disposal Plants	Whooping Cough

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, North Carolina.

Prenatal Care	Baby's Daily Schedule
Prenatal Letters (series of nine monthly letters)	First Four Months
The Expectant Mother	Five and Six Months
Infant Care	Seven and Eight Months
The Prevention of Infantile Diarrhea	Nine Months to One Year
Breast Feeding	One to Two Years
Table of Heights and Weights	Two to Six Years
	Instructions for North Carolina Midwives

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THE NORTH CAROLINA LEAGUE FOR CRIPPLED CHILDREN

Dates and Program

For the 14th year, the North Carolina League for Crippled Children invites all those interested in the welfare of the handicapped to share in financing the work of the League. The Annual Easter Seal Campaign will be conducted between the dates of March 17th and April 17th.

The services of the North Carolina League for Crippled Children are planned so that they supplement but do not duplicate those of any other Social Agency, thus broadening the scope of services available for handicapped children.

There are more than 250 causes of crippling conditions but most of these fall under one of the following major

headings: (1) Inheritance, (2) Congenital conditions, (3) Birth injuries, (4) Accidents, (5) Disease, and (6) Infection. Among the crippled children of North Carolina, over 85% must now depend on the North Carolina League for certain types of services which are extremely valuable aids toward their rehabilitation. Many children with other handicapping conditions, also look to the League for services they need but which are not yet available else where.

During the past year (1948) alone, the county chapters of the North Carolina League for Crippled Children provided services for 5,129 handicapped children of the state at a cost of \$45,361.78. Briefly, the direct services rendered to individual children include the following:

SERVICES	CHILDREN	COST
Transportation to Hospitals, Clinics, Schools	2,676	\$ 7,953.76
Hospitalization	389	6,852.07
Appliances provided	411	6,816.53
Medical Treatments	208	6,963.24
Clothing	12	156.96
Supplementary food and Vitamin Tablets	34	397.60
Camping	44	1,772.16
Dental Care	22	218.85
X-rays	80	288.00
Convalescent Care	124	1,540.00
Special Shoes	28	240.00
Hearing Aids	6	1,050.00
Hospital Bed (Purchased)	4	90.00
Wheel Chair (Purchased)	6	120.00
Psychological and Audiometric testing	108	600.00
Special classes and individual instruction	973	10,258.61
School supplies	4	44.00
TOTAL SERVICES	5,129	\$45,361.78

The above listed services were provided by the 50% of the funds which remained in the county where the funds were contributed. But direct services to individual crippled children is only a portion of the League's activities. Demonstration projects, prevention, legislative, promotional, education and research programs make up the major portion of the work done by the State Office of the League.

During the past six years, the demonstration projects have been in the area of education for handicapped children and have included special training for crippled children, hard of hearing children, speech defected children, and cerebral palsied children. Training classes for teachers to prepare them for teaching handicapped children have also been included in the League's program. Last year, more than 200 teachers had one or more classes in the area of special education.

The League's Work is Varied

Work among crippled children is not a field within itself, it is a segment of many fields. Any crippled (or other handicapped) child needs all of the same things a non-handicapped child plus the additional medical treatments required to correct his handicap—or to minimize it to the lowest degree possible—and specialized education opportunities designed to prepare him to use to a maximum degree all his existing facilities and thus be able to earn his own livelihood and have the privilege of being a useful and contributing citizen.

For that reason, it is hard to give a concise report of the work of the North Carolina League for Crippled Children as its program of activities must be as broad, and as varied as the total needs of life itself.

The League takes a broad interpretation of the word "CRIPPLED CHILD" for it feels that any child with a physical limitation which prevents him from getting an education through the normal channels provided for non-handicapped children, is a potentially handicapped adult. So, no matter how he came by his crippling condition, (or

other defect)—He deserves any help which the League may be able to provide.

So, this report will show a wide variety of services having been rendered to the handicapped children of North Carolina. Some were given to correct a deformity, others to prevent one from developing, while still others provided a beginning stimulus toward a development of the facilities which the child has remaining and upon which he must depend for life to produce for him a livelihood, and whatever measure of happiness he can attain from his surroundings.

Planning a New School, Church, Library, or Other Public Buildings?

Before completing plans for a new school building—and other public buildings—the North Carolina League for Crippled Children would like to beg the local school boards to give some consideration to the handicapped children in their communities. Perhaps you feel that your community is singularly fortunate in that all the children living there are normal children, but are you sure of that fact? Have you made any specific effort to see if there are children who, although not hospitalized, are unable to cope with the routine for normal school life?

The United States Office of Education, in statistics released in 1937 (would probably be higher now), quoted North Carolina as having 62,687 handicapped children in need of special consideration in order to enable them to secure the type and amount of education needed to develop their capabilities so that they may contribute their share to human progress. With that many handicapped children in North Carolina it is reasonable to believe that some of those children will be living in every county of the state.

There are several types of handicapped children whose needs it would be worthwhile to consider before starting to build a new school.

(1) **FOR CRIPPLED CHILDREN—**
For this group it would be helpful to

have ground floor entrances, in larger schools an unloading covered terrace or platform with guard rails on a level with the building entrance, ramps, or elevators if classes are to be held on more than one floor, non-slip floors, hand-rails to assist with walking; little (if any) fixed equipment, and that should be adjusted to meet the needs of the individual child (for instance, leg rests for the child who must wear braces); full length mirrors will help children improve their walking, and therapeutic departments if there is a potentially large number of children with orthopedic handicaps. These therapeutic departments should include treatment tables and other equipment needed for physical therapy including a warm water pool. The pool also could be used for teaching swimming to the non-handicapped children during the hours when not needed for treatments. A room where arts and crafts may be taught is especially helpful for crippled children. Besides teaching them the skills learned there, the added help of improved co-ordination is a valuable aid toward helping the child overcome his handicaps.

(2) FOR HARD OF HEARING CHILDREN—The floors of rooms to be used for this group should be hardwood, air-spaced below to increase the child's awareness of vibration. This is an important avenue in developing the facility of communication among children, who have seriously defective hearing. Special wiring is needed so that mechanical devices and equipment for transmitting sound can be used to help retain all residual hearing a given child has. The ceiling should be acoustically treated.

(3) FOR THE PARTIALLY SIGHTED CHILDREN—The important item for this group is to secure maximum lighting, uniform and without glare or shadows with automatic light switches which turn on lights as soon as needed and turn them off when not needed. The switches can be arranged to turn on one light when a corner gets dark, or the row of lights nearest the wall when a side of the room gets darker than the

area nearest the windows. Soft blues and greens are usually used for the walls, with "sea-moss" green being considered by many specialists as being easiest on the eyes. Dark green blackboards that are hung so they tip further from the wall at the top than at the bottom will prevent glare.

(4) Children with Lowered Vitality and Cardiac Involvements, and many of the children in the other groups already mentioned, will need rest rooms equipped with cots. Lockers for each child to store his individual blankets assigned to him add to the effectiveness of the rest period. Open air classrooms and sheltered sun bathing porches would be especially helpful.

Besides these specific things which will help the already handicapped children to secure educations, otherwise denied them, there is one more need for every careful consideration—the need to Plan for Preventing, wherever possible, the development of a physical limitation. A few items which would be helpful along this line would be; to decorate carefully with a view to sight saving; to give much attention to sunlight and air, and at the same time eliminate drafts and glare; to build all cabinets in the wall and grill all radiators so as to avoid the possibility of accidents; a special corrective gymnasium equipped with well designed and carefully selected apparatus for exercise and training in remedial posture classes; and numerous handrails for the pupil who needs to steady himself occasionally. Automatic light switches would probably save more on electricity in a short time than the extra cost of installing the switches and the saving of glasses in a few years later would be far greater than the cost of installation and operation of a uniform lighting system.

Do You Feel As I Do About Crippled Children?

Do you feel the way I do about crippled Children? Of course you believe that every Crippled Child has a right to every service he needs at the time it will do him the most good . . . that

he has a right to live as near a normal life as his limitations will allow.

Most Crippled Children need many expensive services to help them develop into normal adults and some of their needs are:

Medical Care—the best available and at the earliest possible time so as to correct deformities when possible and improve as much as possible those which cannot be entirely corrected.

Education—special classes or facilities may be needed—but at least the type of training which will help him use his abilities in the best way possible and thus become the best citizen his limited condition permits.

Guidance—to help him better understand his problems and enable him to develop into a strong character capable of accepting his limitations, the curiosity of other children, or the pity of adults without embarrassment or hurt.

Spiritual Training—it is just as important that crippled children be trained to understand and live by the accepted moral and ethical standards of his community as for any other child.

Of course you think that these "rights of Crippled Children" are no different than those of every child and you are correct. All children have the same basic needs for bringing happiness and for growing into useful citizenship but for Crippled Children some of these needs are greater and more costly.

To provide as many of these needs for as many Crippled Children as funds allowed has been the program of the League for Crippled Children for years—to make it possible for all Crippled Children to have every service needed at the time it would be most helpful is the aim of the League.

Every week, more requests are made for assistance than it is possible to give—Won't **you** help us reach those who are still waiting? They are growing older each day they wait and their chances for best improvement are lessened! You wouldn't want any child to have to drag a brace or live in a wheel chair if it could be prevented would you?

The League assists any Crippled Child regardless of cause of crippling—whether congenital, birth injury, disease, infection, or accident as far as its funds permit. With more money we could help more children—won't you help us help them?

"Today's Children"

"Today's children with their hopes and fears, their problems and tears shall be the builders of a brighter world TOMORROW."

What about Crippled Children in that March of Progress? Will they have a share in the building of that better world or do they have to sit on the sidelines and watch? Must a bright mind be ignored because a leg does not function—must skilful hands lie idle because the limbs will not carry the hands to the place where they could be useful?

Records from the past show that a crippled arm, lame leg, a hearing deficit is often the spark which fires an individual to great accomplishment.—Demosthenes overcame his stuttering to speak wisely to all generations;—A Blind Milton produced "Paradise Lost";—A deaf Beethoven gave the world the "Eighth Symphony";—Half paralyzed, Louis Pasteur produced serums which have blessed the world;—Francis Parkman, in such pain that he could work for only five minutes, who could see only to scrawl huge words, gave the world 12 magnificent volumes of history;—Cesar, an epileptic built a great empire;—Charles Steinmetz, the wizard of General Electric, was a hunchback;—Thomas A. Edison, appreciated perhaps by more people than any other American, was deaf in one ear;—Charles Dickens and Sir Walter Scott were lame.—

What about the Cripple Children of our generation? When the records are written, will they show that we left them to shift for themselves, or that we encouraged them to accomplish all they could in spite of their limitations.

A few of them will grow up with courage within themselves to overcome despite their defects, but in the main a philosophical attitude toward one's

handicap does not develop by accident—One of the aims and ideals of the North Carolina League for Crippled Children is that of social adjustment, to help those children accept the reality of their limitations and, after taking stock of the things they cannot do, to live comfortably in the world which is within their ability. Who knows from where the next most startling contribution to the welfare of the world may come? Perhaps, a crippled child in North Carolina, or many of them may be listed in the roll call of the famous. Fame does not require physical beauty as a requisite—it is too evanescent. Only those achieve the heights of everlasting honor who by their labors have benefited mankind.

The work of the North Carolina League for Crippled Children is financed almost entirely from the proceeds from their annual Easter Seal Campaign.

* * * *

HUMAN INTEREST ITEMS

Gene Attended the League's Education Center

Gene was 12 that summer, but he did not talk at all—depended on signs to get him what he might want or need. He was a ward of Juvenile Court at the time the school opened and tentative plans of the court were to have him admitted to the school for Feeble Minded at Kinston. Gene's home was pathetic and his family uncooperative with the social agency which had been actively trying to help him for several years. There had been times when the family sent Gene out to beg for them. He was taught to act "deaf and speechless" as they felt his helpless appearance would add to the "take" that day.

All children enrolled in the summer educational project of the League for Crippled Children were given mental tests as well as speech and hearing tests. Gene's mental test showed that he was not feeble minded.

All children also were given physical examinations, and there Gene's peculiar posture was discovered to be the

result of an injury to shoulders and neck. He was referred to an Orthopedic Surgeon. Gene progressed so well during his 4 weeks of specialized training that a change of plan was made for him. Instead of being sent to the school for feeble minded he was placed in the home of a kindly couple.

He was provided with needed dental treatments, and orthopedic care. After that his improvement in school was remarkable. His speech gradually became audible and his vocabulary increased rapidly, — and one more handicapped youngster has joined the ranks of those who will grow into self-supporting adults.

It's June 17th

"Wake up, Ted, it's June 17th." "Is it REALLY June 17th?" You wouldn't tease me about anything as important as that, would you?" "No. Ted, we wouldn't tease you. It actually is June 17th. Hurry now and get dressed. Breakfast is ready and when you've finished eating we are going to start."

Ted did hurry to get dressed, but he refused to take time to eat for he said, "We'd better get going now 'cause it is 172 miles to Chapel Hill, and I have to be treated at 1:30 you know."

Of course they knew the distance and the time for his appointment and that there was time for him to eat his breakfast before starting but he was so anxious they finally gave up and came along.

When it came time for lunch he insisted that they not stop for fear it would cause him to be late and he wouldn't get to stay at the Educational Center being opened for children with physical handicaps. Ted had been born with a cleft palate, and even though the cleft in his mouth had been corrected by surgery, he still talks with a strong nasal tone and had a decided speech defect.

Ted had attended the Center two years before when he was twelve, and had been a good student then, but his determination to improve his speech at 14 was much stronger than it had been 2 years before.

Because of his haste to arrive on time and his refusal to take time to eat either of his meals that day, he arrived almost an hour early, and even though severely fatigued from the long drive without food, Ted entered the Center wearing a smile of the type not too often seen. The other children who had been scheduled to arrive during the morning had been given their lunch and the dining room was closed so it was not possible to secure food just then for Ted but one of the workers learned that he had not eaten all day sent to a near-by drug store for a milkshake for him.

Soon after that, Ted was called for his examination. First he saw the physician who found him to be very healthy even though fatigue was decidedly evident. Then, his hearing was tested and found to be normal. Next he saw the speech correctionist who gave him speech test and prescribed the line of speech therapy which his teacher was to follow. His last test was the psychometric test and when the examiners met to discuss Ted (as they did all cases) his I.Q. was rated much below the level set for admission to the center.

Fortunately, the director of the center had seen Ted at work two years before and knew he did have at least average intelligence and even tho the story about his anxiety to reach Chapel Hill and his refusal to take time to eat had not been given her, she felt something was wrong, so insisted that the I.Q. score not be considered for the present, and that he be kept, at least temporarily. After a few days had passed, he was given a second mental test and his rating, well above average, quite justified the decision to have Ted stay, as did his work during the four weeks duration of the Educational Center,

Besides his speech classes, Ted went swimming, played baseball and other games with his pals who had also come to the Center in order to try to improve their speech. On the last 2 days of the Center's program his parents attended the Parents' Institute so that they could help Ted continue at home some of the work he had started in his speech

classes and thus help him continue to improve his way of speaking.

Ted has made a nice adjustment so far as accepting his handicap is concerned. He has been known to have been teased by boys of his own age and he takes it casually. He even explains that he is unfortunate enough to have been handicapped all his life, while they have been fortunate so far, but he reminds them they could have an illness or an accident which could leave them with a more severe handicap than his is.

When Ted's parents came for him, they brought his younger brother (now 10) and while the two boys "swapped" experiences, the younger boy expressed a desire to come to the Center next year, for he believed Ted had had more fun during the month just passed than he had. Ted explained that it would not be possible for the brother to be admitted to the Center since he had no handicap to be corrected. The brother then turned to a staff member (who had been standing close enough that she had overheard the conversation) and said, "If I'd walk up to Miss Honeycutt and stutter real bad while I asked her to let me come with Ted to the Center next year, do you think she would let me in?"

Speech—O

Among the equipment of one of the therapists directing a speech correction class next fall was a game called "Speech—O". The game is something like lotto, only the word on the card which is turned up must be pronounced and the player is scored on the basis of how well he says the word.

Since the game was entertaining, and the children thoroughly enjoyed playing it, the results from the time spent with "Speech—O" were especially good.

One day, about a month before Christmas, one little lad confided to his teacher that he had written Santa asking that a "Speech—O" game be included among his Christmas gifts. He asked if the teacher could also send Santa a note telling him that the little boy needed a "Speech—O" game. She assur-

ed him that she would get in touch with Santa and Santa did bring the "Speech—O" game.

Plastic Ear

To be "different" in school brings many unhappy experiences to a child. One of the County Chapters of the League for Crippled Children learned that a little boy attending one of the city schools had been born with only one ear. The child's embarrassment was acute.

The Committee asked if it could help. It could, and did. The result was a plastic ear. No longer was this little boy thought "queer" by his school mates. His social adjustment had improved immensely, and the \$75.00 the Committee invested can only be measured in terms of happiness.

Statistics

Approximately 146,000,000 persons live in the U. S. (Source: U. S. Census Bureau, July, 1948.)

23,000,000 of these or one out of six has some type of handicap. About 97% of all handicapped persons can be rehabilitated sufficiently for them to obtain gainful employment. (Source: Baruch Committee on Physical Medicine.)

Accidents during 1947 required 1/10 of all available hospital beds! Many of the injured will remain permanently handicapped. 100,000 persons were killed and 80,000 were injured in the United States. There were 500 accidents daily and these resulted in one death every 16 minutes during the year. (Source: National Safety Council.)

Children needing Special Education.
On the basis of estimated population of the total number of Children in the United States:

- 2% are blind or partially sighted.
- 1.5% are deaf or hard of hearing.
- 1% are crippled.
- 1.5% have speech defects.
- 2% are mentally retarded.
- 0.2% are epileptic.
- 2.5% are behavior problems.

(Source: United States Office of Edu-

cation—Leaflet No. 4)

Number of Children with Cerebral Palsy. To every 100,000 population:

7 children are born each year with Cerebral Palsy, or

1 for every 215 births.

Of these 1 out of the 7 dies in infancy or soon after.

2 out of the 7 are uneducable.

2 out of the 7 are mentally gifted.

2 out of the 7 are average mentally.

'Source: Dr. Winthrop M. Phelps—"The Doctors Talk it Over."

According to the State Health Department 109,372 babies were born in North Carolina last year. Of these, 508 children (one out of every 215 births) sustained brain injuries, and will be paralyzed to some extent. Many of this 508 will be severely paralyzed, and the majority will require much medical treatment, specialized care and training. 70 percent of all cerebral palsied children are capable of becoming self-supporting citizens, if given adequate training and opportunities.

One child out of every 800 is born with a cleft palate, making North Carolina's total for last year 124. Of every 1,100 births one baby has club feet, which means North Carolina had 10 babies born last year with that deformity.

Statistics on osteomyelitis, polio, rheumatic fever, and the other 251 causes of crippling, show that North Carolina's handicapped constituency is increasing, as well as that of the rest of the nation.

No one expects to become crippled, and no one expects to be born crippled, or to become crippled as the result of disease, accident, or infection. Few families are financially able to adequately meet the needs of a handicapped member, and to date no social agency, either public or private, has been able to provide all the needs of the handicapped groups.

The objective of the North Carolina League for Crippled Children, Inc., is to help those who became crippled last year, and the years before, and those who will become crippled in the years to come. The League does not have funds to meet all the needs of all the

handicapped groups in the state, but by supplementing the services of other agencies, and by spending continuously

what funds it does have, it has been able to provide some of the services needed for a small number.

VITAL STATISTICS

WILLIAM H. RICHARDSON

State Board of Health

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Frequently, Bulletin articles have been devoted to a discussion of vital statistics—that is, the number of people who are born and who die during certain specified periods of time. Vital statistics might properly be referred to as the bookkeeping of life and death.

The State Board of Health also keeps another important set of records, dealing with the number of persons suffering from 35 diseases, practically all of which are capable of being transmitted from person to person, under certain circumstances. Some of these diseases are more contagious than others. Many of them are controllable, through the application of modern scientific discoveries. It is perfectly logical to say that when diseases are controlled or prevented, the death rates from such diseases are, or should be, reduced.

A morbidity report reveals the number of people who become ill. A majority of those who go down with almost any disease get well, with certain exceptions. Others die. Those who become ill are included in morbidity reports. Those who die are included in vital statistics reports. We propose at this time to discuss morbidity in North Carolina.

The sixteenth bulletin of North Carolina morbidity statistics, covering the calendar year 1947, contains the same tabulations of the thirty-five reportable diseases as are contained in the previous bulletins.

There are three diseases which have shown some increase during the past few years: *granuloma inguinale*, *Rocky Mountain spotted fever*, and *tularemia*. **Granuloma inguinale**, which was not made reportable until 1945, has shown a

slight increase in reported incidence each year since that date. **Rocky Mountain spotted fever** has made a small increase each year except one since 1941. The rate at that time was 0.6 cases per 100,000 population and is now 2.4. The **tularemia** rate in 1944 was 0.3 and has increased to 2.0 in 1947.

In addition to the above, **chancroid** has shown increases for the past two years, reaching 14.3 cases per 100,000 population in 1947, as compared to 11.8 in 1945. The highest chancroid rate in the past ten years was 18.4 in 1943. **Tuberculosis** has shown an increase in reported cases for the past three years, probably largely due to improved case findings. The 1947 morbidity rate of 96.6 together with the mortality rate for the same year of 28.4, presents the most favorable ratio of cases per death in North Carolina for many years. There has been an increase in the percentage of reported minimal active tuberculosis cases from 14.7 in 1945 to 16 in 1947. **Undulant fever** increased from 9 cases in 1946 to 21 cases in 1947.

In 1947, **poliomyelitis** cases reached the third largest number ever reported. The majority of the cases were confined to three south central counties in the state and occurred relatively late in the season.

Gonorrhea and **syphilis** remain the largest single cause of morbidity among the reportable communicable diseases; however, encouraging declines occurred in 1947. The **gonorrhea** morbidity rate has been steadily rising in this state, as reporting and case finding have improved. Ten years ago the reported gonorrhea morbidity rate was 82 cases per

100,000 population. This rate increased steadily to 421 in 1946. This past year shows the first sizeable decline that has taken place during this period with a rate of 381. **Syphilis** morbidity reports rose steadily for many years until 1939 when a peak of 877 cases per 100,000 population was reported. Following that year, syphilis morbidity declined annually until 1946, when the rate again rose to 242. In 1947, the rate declined to 235. Whether or not this decline represents a renewal of the downward trend in syphilis morbidity, interrupted by demobilization, remains to be seen.

Diphtheria morbidity rose slightly over the record low established in 1946; however, pertussis morbidity was the lowest recorded since 1936. **Typhoid fever** cases reached a record low of 47 cases, having declined without interruption since 1935.

An interesting decline has taken place in **scarlet fever** morbidity during the past two years. Prior to 1945, the rate fluctuated between 60 and 80 cases per 100,000 population over a period of at least ten years without any tendency to decline. In 1946 the rate dropped to 40, the lowest recorded. In 1947 the rate dropped still further to 31.

The hazard of war-born **malaria** and **amebic dysentery** appears to be steadily diminishing. While reports of malaria in veterans are being received, the overall recorded malaria morbidity rate declined from 9.6 cases per 100,000 last year to 3.7 in 1947. The rate for amebic dysentery remained unchanged at 0.5 cases per 100,000 population.

Murine typhus fever declined to 1.4 cases per 100,000 population, making the fourth consecutive year of decline. This is the lowest rate recorded for this disease since 1934. **Meningococcus meningitis** declined to the lowest point since 1942, having decreased each year since 1943. The rate that year was 13.2 the highest recorded in many years, and may have been a result of large population movement during the war. The 1947 rate is 2.6.

Now, for an over all picture of morbidity statistics in North Carolina during the calendar year of 1947. The 35 re-

portable diseases caused 38,016 individual illnesses. During the year there were 14,169 cases of gonorrhea reported to the State Board of Health; 8,724 cases of syphilis; 3,484 cases of pulmonary tuberculosis; 4,978 cases of measles, and 2,983 cases of whooping cough. In spite of the fact that diphtheria can be prevented, and despite the fact that immunization of babies between 6 months and a year old is compulsory, there were 751 cases of diphtheria reported during the calendar year. Fortunately, however, there were only 33 diphtheria deaths.

The above 38,016 cases of illness represent only 35 diseases. Ailments which cause the greatest number of deaths, however, are not in the reportable class. For example, 2,777 people died of cancer in North Carolina last year; 7,487 were victims of heart diseases; 3,379 died of apoplexy; 2,614 died of Bright's disease, and 1,307 of pneumonia. These figures, remember, represent death from some of the diseases which are not reportable. There were thousands afflicted with these known reportable diseases who did not die last year. We must keep in mind that the degenerative diseases referred to above are not preventable. At the same time, however, they are not contagious, but, combined, they kill more people every year than do all the contagious and reportable diseases.

Now, back to the reportable diseases, for our conclusion. You have been given the number of cases, last year, of gonorrhea, syphilis, pulmonary tuberculosis, diphtheria, and whooping cough. Let us, then, make a comparison of the number of cases and the number of deaths in each instance. As previously stated, there were 33 diphtheria deaths among the 751 children who were down with that disease last year. During 1947, there were reported to the State Board of Health 256 syphilis deaths among the 8,724 cases reported. While 3,484 cases of pulmonary tuberculosis were reported, there were 983 deaths. We shall not undertake to compare current tuberculosis deaths with currently-reported cases, because it is certain that many of those who died last year contracted the disease

before 1947. Some of them probably had had tuberculosis for years and were not diagnosed until it was too late to effect a cure. This should serve as an incentive to all to make sure they have not the disease—not even in its incipency—by having their chests X-rayed. This service is now available, without cost. Case-finding machinery already has been set up in many counties and, it is safe to say, many lives have been saved because of early diagnosis and treatment. Medical science now knows how to take care of tuberculosis in all

but the most advanced stages. Let us conclude then, by urging everyone to have a chest X-ray made, at the earliest possible moment. The fight against the white plague now is on in earnest. Only the people who have the opportunity to avail themselves of benefits of the present case-finding program are to blame if they wait too long. There are more avenues to suicide than guns, knives, and poison drugs. They work quickly it is true. Neglect is a slower but none the less effective means of self-destruction.

NOTES AND COMMENT

Public Health Nurse Chosen as Representative



Miss Lida Grey Bissette, Registered Nurse in Public Health of the Wilson City and County Health Department, and a recent graduate of the Woodard Herring Hospital, has been chosen by that hospital to represent it in the contest to receive the Linda Richard Award, which will be one feature of a "Diamond Jubilee Program of the

American Nurses' Association".

The American Nurses' Association will present the Award to one outstanding nurse in each state who graduates from an accredited school of nursing and becomes registered during the period August 1, 1948, through July 1, 1949. The Award will be granted on the basis of achievement, scholarship, aptitude for nursing, devotion to duty, leadership, appearance and personality. So long as she is registered, a professional nurse, it makes no difference in which field the contestant is employed. She may be engaged in private duty or hospital staff work, in public health, industrial, school, army or navy nursing, or of any other branch of the profession.

The Award will be furnished by the American Nurses' Association and will consist of a bronze medal bearing the likeness of Linda Richard and carry the inscription on the obverse "Diamond Jubilee of American Nursing 1948-1949"; and in the center of the reverse "(name of nurse) Award of Achievement"; at the top of the perimeter "American Nurses' Association", and at the bottom "North Carolina State Nurses' Association".

The Award will be presented to the North Carolina winner at the forty-seventh annual convention of the North Carolina Nurses' Association, which will be held in High Point the week of October 23, 1949.

ACCIDENTS RANK FIRST AS DESTROYER OF WORKING YEARS

CHICAGO—A complete cure for heart diseases or cancer would have added fewer working years to the life expectancies of the American people in 1945 than would have been added by prevention of all fatal accidents, according to the Bureau of Medical Economic Research of the American Medical Association.

Writing in *The Journal of the American Medical Association*, Frank G. Dickinson, Ph.D., director of the bureau, and Everett L. Welker, Ph.D., associate in mathematics, say that fatal accidents now cut more years from the working lifetimes of the people of the United States than do deaths from any one natural cause.

The total numbers of deaths, which show heart diseases and cancer to be number one and number two "killers," are not alone an accurate measurement of the number of working years—those between the ages of 20 and 65—which are lost by death, they say, because mere numbers conceal wide differences in the average ages at death from different causes.

Neither can the loss to the productive and military strength of the nation from any one cause of death be accurately determined by this one measure in the present period of declining mortality, long life, and a rapidly aging population, they point out.

These conclusions are not based upon an alarming rise in the number of fatal accidents, but upon man's conquest of disease—medical progress against the "younger" and some of the "older" causes of death—the article emphasizes. The leading causes of death are divided into "younger" and "older" causes because the average age of persons who die from heart disease, cancer, intracranial lesions of vascular origin, and nephritis is 22 years more than that of persons who die from pneumonia and influenza, accidents, and tuberculosis, the article indicates.

Actually, the high death rate of persons 65 years of age and over from the "older" causes of death is an indication of the progress that has been made in extending the lifetimes of many persons who formerly would have died in young or middle age from these diseases, the authors point out.

In the "younger" group of diseases, pneumonia fatalities have been sharply reduced by the "wonder" drugs, such as sulfanilamide, sulfadiazine, and penicillin.

Dr. Dickinson and Dr. Welker's classifications of the seven leading causes of deaths were taken from the *Manual of the International List of Causes of Death*, compiled by the United States National Office of Vital Statistics, Washington, and published in 1946. They were—diseases of the heart, including rheumatic heart disease, which is mostly a disease of children and young persons; cancer and other malignant tumors; intracranial lesions of vascular origin; nephritis; pneumonia and influenza; tuberculosis; and accidental deaths.

Using these classifications, Dr. Dickinson and Dr. Welker developed two new measures for ranking the causes of death. Both take into account the age as well as the number of persons dying from each cause.

One measure, working years lost, is based on the concept of a working lifetime as the period between the 20th and 65th birthdays. Everyone below age 65 has a certain number of "unrealized" working years ahead of him which are destroyed if he dies before the customary retirement age. When the unrealized working lifetimes of all persons dying from each of the causes are added together, the various causes can be compared in terms of the amounts of the nation's productive capacity which they destroy, the authors explain.

The other measure, life years lost, is the same as the first except that it considers the leisure as well as the work-

ing years destroyed by death and is based upon the average life expectancy of the American people at death rather than upon the arbitrary designation of the working years.

Applying these two new measures to the leading causes of death in 1930, 1935, 1940, and 1945, as listed by the National Office of Vital Statistics, Dr. Dickinson and Dr. Welker found that in 1945, a year of nationwide gasoline rationing, fatal accidents were first in terms of working years lost, although heart disease killed over four times and cancer nearly twice as many persons. Accidents held this same rank in 1940, were second in 1935, and third in 1930. Accidental deaths accounted for 7 percent of all deaths in each of the four years studied. Young white men are the chief victims of accidents, the article says.

In 1945 the number of working years lost from accidental deaths was 1,750,000, which may be compared to 1,680,000 from heart diseases, 1,110,000 from pneumonia, and 1,040,000 from cancer in the same year. Pneumonia deaths which held first place in 1930 and 1935 as a cause of working years lost, dropped to third place and tuberculosis, which held second place in 1930, dropped to fifth place.

The authors developed these two new measures to evaluate the loss to society resulting from the causes of death, and point out that neither is designed to gauge the importance of any one cause to the individual. As a whole, the study shows that the people of the nation are living longer and dying during old age when their working lifetimes are largely over. In 1945 no leading cause of death struck primarily at the young, mortality from diseases which kill before middle age had decreased rapidly, and the majority of heart and cancer deaths occurred after age 65.

The findings that fatal accidents are a greater menace to the nation's economy and security than is any one natural cause of death suggest that persons who plan health improvement programs do well to place more emphasis on accident prevention.

The public must also, as patients, cooperate with physicians, and must continue to support medical research and education if the accelerated rate of medical progress is to be maintained, the article points out.

As a guide to the use of the two new measures, Dr. Dickinson and Dr. Welker say that "if the retired, leisure years are a major consideration, life years lost are recommended as the better of the two measures. If economic considerations are paramount, use of the second measure, working years lost, is advised."

The complete story of Dr. Dickinson and Dr. Welker's study may be found in their recent published monograph, "What Is the Leading Cause of Death?"

The bureau plans to make a second study using similar criteria to measure the loss to society from disability resulting from sickness and injury, both fatal and non-fatal. The authors believe that the common cold will rank high among the leading causes of disability.

* * * *

FUNDS MEAGER FOR RESEARCH ON HEART CONDITIONS

An editorial in *Hygeia* states:

"Today in the United States heart disease is the new captain of the men of death; fifty years ago it was tuberculosis. Once the acute and chronic infectious diseases were far greater as a menace to mankind than diseases of the heart, high blood pressure and hardening of the arteries.

Today tuberculosis is seventh among the causes of death. High blood pressure and hardening of the arteries are responsible for 45 percent of all cases of heart disease in adults.

The prolongation of life by the techniques of modern medicine has resulted from the manner in which the diseases of childhood have been brought under control. People today live far longer than they did in 1900.

Rheumatic heart disease is the leading fatal disease among children between the ages of 5 and 19. Many of

those who die of heart disease as they grow older represent children who have had rheumatic heart disease and who then suffered, more or less, disability for their remaining years.

Thus heart disease takes its toll in sickness and disability as well as in death. Thousands of men in the prime of life whose economic value to society is tremendous are stricken when they are beginning to make their richest contribution.

From the facts here recited, the outlook may seem dismal. Perhaps the apathy of most people toward heart disease and the acceptance of the inevitability of deaths from diseases of the heart are largely responsible for our failure to meet the challenge.

The American people contribute millions of dollars to the control of tuberculosis, cancer, infantile paralysis, and many other easily dramatized diseases. The funds for research on conditions affecting the heart are pitifully meager.

Already scientific medicine has done much in its advances against heart disease. The development of surgery of the heart in recent years has been among the most striking of medicine's great accomplishments, yet far more remains to be done than has already been accomplished.

What has been achieved is merely the proof of how much could be accomplished if the men and the facilities and the funds so sorely needed could be made available.

Every year during the past decade we have increased our knowledge of the coronary arteries. The development of the radioactive isotopes and of technics for catheterizing the heart and research with the electrocardiogram have permitted studies to be made that go far beyond anything that could be imagined twenty years ago. Yet for these studies the funds available are pitifully small.

Already the scientists who devote themselves wholly to the basic medical sciences, anatomy, physiology, bacteriology, pathology, biochemistry, and pharmacology among others, are ready and capable of extending their fundamental research into unsolved prob-

lems of diseases of the heart.

Many of these scientists are the teachers in our medical schools. If we look forward as we should to the future, they must be given opportunity to train young men in the knowledge of their sciences so as to make them available for research in the future.

Today the attack on disease requires teamwork. The medical personnel includes physicians, technicians, statisticians, nurses and social and clerical workers. The facilities include clinics, hospital wards, research laboratories, administrative offices, sanitarium, and rest camps. Both personnel and facilities are inadequate to meet the need.

A comprehensive program of research on problems of diseases of the heart means more facilities for the care and study of patients, more laboratories for research, more trained personnel. The need is established. America can and should meet that need."

AVERAGE AGE OF PHYSICIANS AT DEATH RISES STEADILY

CHICAGO—The average age of physicians in the United States at death has risen steadily during the past four years, according to American Medical Association statistics.

In 1948 the average age of physicians at death was 67.4 years, says an editorial in *The Journal of the American Medical Association*. In 1947 it was 66.7 years; in 1946, 66.1 years; and in 1945, 65.3 years.

Heart disease is the number one killer among physicians, *The Journal* figures for 1948 show. Coronary thrombosis, angina pectoris, rheumatic heart, and other heart conditions accounted for 41 per cent of the 3,230 deaths of physicians reported by *The Journal* during the year.

Diseases of the nervous system were second, causing 412 deaths, cancer and other malignant tumors third, accounting for 348 deaths, and accidents fourth, accounting for 173 deaths.

Falls caused more deaths than did any other type of accident, and motor

vehicle accidents caused more than twice as many deaths as did air transport accidents.

Other major causes of death among physicians were diseases of the respiratory system, accounting for 163 deaths, and diseases of the digestive system, accounting for 114.

Twenty-three physicians of the 3,230 total were killed in action during World War II, and 33 died while in military service.

EMOTIONAL STRESS CAUSES MOST HEADACHES

CHICAGO — Most headaches are caused by emotional stress, five New York physicians indicate in The Journal of the American Medical Association.

Three of the physicians—Arnold P. Friedman, of the Headache Clinic Section, Mental Hygiene Service, Veterans Administration, and Charles Brenner and Sidney Carter, from the Division of Neuropsychiatry, Montefiore Hospital, and the College of Physicians and Surgeons, Columbia University—conducted special headache clinics. They found that headaches for which there is no apparent physical cause and headaches following head injuries were by far the most common among patients.

Treating 494 patients with headaches of these kinds, the three physicians found that 50 to 60 per cent responded favorably to almost any medicine given them, and nearly as well to placebos, harmless but effective substitutes for drugs.

Treatments used included psychotherapy, pain-relieving drugs, substances to constrict and dilate the blood vessels, vitamins and hormones.

Results of the study strongly suggest that the effectiveness of the medications was caused primarily by the patient's psychologic reaction to the treatment situation in general and to having a "remedy" from the doctor, the article says adding:

"Both types of headache probably are responses of the body to distributing psychologic stress."

Robert M. Marcussen, M.D., and

Harold G. Wolff, M.D., from the New York Hospital and the Departments of Medicine and Psychiatry, Cornell University Medical College, made a study of migraine headache.

The typical sufferer from migraine headache, they found, is ambitious and tends to be a perfectionist.

Describing the personality of persons suffering from migraine, the physicians say:

"They are tense driving persons who have found that doing more than and better than their fellows brings a good deal of satisfaction. However, this end is accomplished at a great cost in energy. They become resentful because they cannot keep up with the load which the world and themselves impose.

"The natural outcome is tension, fatigue, and exhaustion; in this setting headache makes its appearance. Rage, resentment, and frustration are often common denominators of the emotional derangement preceding an attack of migraine. However, dramatic events need not precede headache—many follow long periods of so-called routine living with slowly accumulating tension."

Although the doctor can make the migraine patient aware of the cost of such a way of life, the decision of what to do about it is the patient's, the physicians emphasize.

OUR FRONT COVER — Graham D. Canfield, son of Mr. and Mrs. Norman S. Canfield, Morehead City, North Carolina, born July 25, 1947 with no right leg below the knee and no toes on left foot. He was taken to the Orthopedic Clinic at Greenville, North Carolina. When about a year old he was hospitalized under the supervision of Dr. Hugh A. Thompson, Orthopedic Surgeon, Raleigh, North Carolina. An artificial leg, constructed by J. E. Hanger of Raleigh, North Carolina, was fitted on Graham when he was thirteen months old. He started using it when he was fourteen months old. The picture was taken one month later when he was walking and running as well as a normal child of his own age.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
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Don't Spit Placards	Padiculosis	Vitamins
Endemic Typhus	Pellagra	Typhoid Placards
Flies	Residential Sewage	Water Supplies
Fly Placards	Disposal Plants	Whooping Cough

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, North Carolina.

Prenatal Care	Baby's Daily Schedule
Prenatal Letters (series of nine monthly letters)	First Four Months
The Expectant Mother	Five and Six Months
Infant Care	Seven and Eight Months
The Prevention of Infantile Diarrhea	Nine Months to One Year
Breast Feeding	One to Two Years
Table of Heights and Weights	Two to Six Years
	Instructions for North Carolina Midwives

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SCHOOL HEARING CONSERVATION ACTIVITIES IN NORTH CAROLINA

By

C. P. STEVICK, M. D., M. P. H., Co-DIRECTOR
School-Health Coordinating Service

School health work in North Carolina is the responsibility of schools and local health departments. In the conduct of this work the local agencies receive assistance from the State Department of Public Instruction and the State Board of Health.

Much can be taught in our public schools that will enable the student not only to be healthier when he graduates from high school, but also to know what he needs to do to preserve his health for the remainder of his own life, and insure good health for his children. Learning is frequently accomplished most easily by doing, and our school health program in North Carolina includes—where available—certain nursing and medical facilities that provide for the finding of children with physical and mental defects; and, at the same time, give the children valuable educational experiences in health.

The school health service we wish to discuss briefly here pertains to the conservation of the hearing of our school children. This is a program that the School-Health Coordinating Service, a joint Division of the State Departments of Health and Public Instruction, is helping to develop throughout the State.

Hearing conservation in the public schools can be divided into four closely related activities:

I. Hearing testing of the school population

II. Medical care for the children with hearing defects

III. Special education for those needing it because of their handicap

IV. Vocational rehabilitation in selected cases

The first step in the actual carrying out of the hearing work in the schools is to find the children with hearing defects. The human ear is capable of hearing a wide range of sound, from very low notes in the musical scale to extremely high notes. Due to the way in which the nerve of the ear is constructed, it is possible for a person to lose the ability to hear high notes or low notes, but to hear all other notes fairly well. In other words, the ear can be damaged by disease so that certain sounds can still be heard, but others cannot. This fact is important in testing the hearing of children. A child may hear certain sounds well, but have difficulty understanding speech. A parent or teacher may know that the child hears thunder or music and, because of this, fail to recognize that the child does not hear speech well. It is also possible for a child to hear speech well, and yet have a loss of hearing in the range of sound that is higher in pitch than the human voice.

Certain apparatus has been designed to test hearing accurately. This apparatus is able to detect loss of the ability to hear any part of the full range of sound. It is obvious that tests of hearing that are not carried out by means of such apparatus are not complete or very accurate. Because of the expense of this apparatus and the time involved in using it, this phase of school health work in North Carolina has only recently received wide-spread attention.

The following counties and cities now have audiometers—as they are called, for testing hearing in the schools. In some cases, the purchase was made by interested civic clubs, such as the Exchange or Kiwanis Clubs. In other instances, the schools or health departments purchased the equipment. The counties and cities are: Alamance, Buncombe, Burke, Catawba—Lincoln and Alexander, Cleveland, Gaston, Halifax, Moore, New Hanover, Pasquotank—Perquimans and Camden, Rowan, Vance, Wake, Wayne, Asheville, Charlotte, Greensboro, High Point, and Rocky Mount.

There may be one or two other counties or cities that should be included in this list, but for which the School-Health Coordinating Service does not have complete information.

It can be seen from this list that only part of the State is covered by the proper equipment. It is hoped that additional funds for school health work will be available soon for assisting the counties in purchasing audiometers and providing personnel to operate them.

In those counties having machines, the nurses and teachers or technicians working in cooperation with the nurses, test the children in a carefully selected room in the school where as much noise is excluded as possible. Tests require about two minutes per child and can be given to children in all grades. The ideal program provides for testing every child every other year.

The test with one type of audiometer ("puretone") is carried out as follows: The child holds the receiver of the audiometer to his ear just as if he were listening to the telephone. The person

giving the test then turns a switch on the audiometer that reproduces a low pitched musical note in the receiver. The audiometer also has a volume control which is adjusted so that the musical note is exactly as loud as it should be for the normal ear to hear. If the child hears the sound, he raises his hand. The switch on the machine is then turned to the next note in the scale. A total of eight separate tones are used in testing each ear. The tones are selected so as to cover the complete range of hearing. If the child is unable to hear any two of these tones, or musical notes, he is then scheduled for a more complete test at a later date. At the time of the retest, the volume control is adjusted for each tone until it is found exactly how loud the sound must be before the child can hear it. In this way, the exact degree of hearing loss can be determined and the type of sounds that cannot be heard are also clearly evident.

This type of test is performed with one child at a time. There is another type of tests that can be carried out with 25 or 30 children at a time by means of multiple ear pieces connected to a phonograph. The phonograph test is not as accurate as the test in which the separate tones are used and is not used as widely now as formerly.

In those counties where testing has been started in the schools for the first time, approximately 3 to 5 per cent of the children have been found to have defective hearing requiring referral to a physician. In the case of many of these children, prompt medical care restores the hearing to normal. This is why the hearing program is officially spoken of as a **hearing conservation** program. If found early enough, a large number of children with ear trouble can permanently preserve their normal hearing ability. As mentioned above certain children who are able to hear conversation easily may not be able to hear high pitched sounds. Such a child is just as badly in need of medical care as those having an inability to hear conversation because the loss shows that some disease process is

present and the damage done to the upper tones only may become progressive and later affect the speech range of hearing. It is only by means of the "puretone" audiometer tests that this type of child can be located and referred for medical care.

When a child is found with certain degrees of deafness, his educational care must be planned in addition to his medical care. In mild cases, seating near the teacher is all that is required. In more serious cases, lip reading instruction is needed. For children with a progressive hearing loss, it is important that lip reading be taught before all of the hearing is lost, since it is much easier to learn to read someone's lips if his voice can also be heard at the same time. Speech correction is necessary for some children who, because of their inability to hear speech clearly, do not speak clearly themselves. For those children who are unable to progress satisfactorily in our public schools, the State has excellent schools for the deaf. The colored school for the deaf is

in Raleigh, and the white school is at Morganton.

The State Vocational Rehabilitation service of the State Department of Public Instruction is able to provide special medical care and vocational training for many persons over 16 years of age, who are otherwise unable to receive it. The objective of this program is to assist worthy persons in learning vocations in which their physical defects are not a handicap. Many well paid jobs can be done as well or better by handicapped persons as by persons without defects of any kind.

From what we have outlined here, it can be seen that the hearing program requires the cooperation of schools, health departments, civic clubs, and many other agencies. We have made a good beginning in North Carolina, and when funds become available to buy additional equipment and employ additional nurses, teachers and other personnel the program can move forward rapidly as one of the many phases of a well rounded school health program.

WINDOW OPERATION FOR DEAFNESS

By

JAMES W. BALLEW, M. D.
Raleigh, N. C.

Sound is vibrations in various wave lengths. The normal human being is capable of intercepting and interpreting a certain range of wave lengths in the sound spectrum. When this sound is transmitted to our brain, and there interpreted by the conscious mind—we hear. The segment of the sound spectrum audible to the human varies from about the low of the bullfiddle or base horn: to the highest pitches of the violin—a watch tick—or a cricket's chirp. The normal conversational range of the human voice is approximately the middle half of the sound segment.

The mechanism for changing the vibrations of sound to the nerve impulses that are carried to our brain

for interpretation or action is located in a hard bony capsule located in the base of the skull. This capsule also houses the mechanism concerned with our balance and equilibrium. The part concerned with balance is called the labyrinth, and that part concerned with hearing is called the cochlea. The cochlea is named for a spiral shaped shell-fish, which it resembles. The labyrinth suits its name too. There are two flexible openings to this bony capsule. One of these is called the round window, and the other is called the oval window. The round window is covered by a thin membrane, and the oval window is closed by the footplate of the Stapes. The Stapes is one of the bones serving to

transmit the vibrations of sound from the ear drum to the fluid of the labyrinth. The whole capsule is filled with fluid in which floats the soft tissues of the nerves and organs of hearing and balance.

Normally the vibrations of sound entering at the oval window causes the fluid within the capsule bathing the sensitive endings of the nerve of hearing to vibrate and move. It is theorized that the thin membrane covered round window serves as a valve to allow the fluid to move freely and quickly. This vibration of the fluid is picked up by the nerve endings—changed to nerve impulses and transmitted to various parts of our central nervous system.

Normally, the footplate of the Stapes moves freely in the oval window. But in a certain group of people there is an overgrowth of bone in this area. And the edge of the oval window overgrows the narrow space to the footplate and fix the Stapes so that it can no longer move freely. Vibrations are no longer transmitted freely to the fluid of the labyrinth. Thus altho the nerve of hearing itself may be in perfect condition, the individual no longer hears well. This condition is known technically as Otosclerosis.

Otosclerosis can and does occur at any age, but the larger per cent of cases needing help to hear is the 25 to 45 year group. These people are in the most active and productive period of their lives. This fact, plus others inspired much work on some surgical procedure that might help these people. Many attempts were made, but failed. The greatest cause for failure in even well devised technics was infection following operation. This is serious because infection in the labyrinth usually causes profound or total loss of hearing in the affected ear. And it was almost certain to be complicated by a meningitis. The advent of the sulfa drugs and the antibiotics, such as penicillin caused new thinking and activity in the field. In the late thirties, Dr. Julius Lempert worked out the basic technic for the operation known as the fenestration or window operation.

In performing this operation, the surgeon cuts thru the outer ear, and opens the mastoid bone. He then locates the part of the bony capsule (labyrinth) known as the horizontal semicircular canal. This canal is concerned with our balance mechanism, but as noted previously, the fluid in which the soft tissues float communicates freely with those bathing the organ of hearing. The surgeon then makes a new opening into the bony capsule on the anterior end of the canal. Meanwhile, he has carefully dissected free the skin covering the back of the external ear canal, which leads from the outer ear to the drum. He leaves this attached to the ear drum. At the end of the operation, he covers his new window with the upper part of the ear drum and this skin. This skin is the only thing that has been successful in keeping the window from closing. This skin is tissue paper thin, and contains no oil or sweat gland, and no hair follicles.

The operation is not as simple as it may sound. It is tedious and difficult to perform, and in unskillful hands may lead to permanent injury to the patient. The surgeon must be quite skilled in ear surgery of other kinds before attempting the fenestration operation. Even skilled ear surgeons spend much time practicing the operation on cadavers before attempting it on live patients, even under supervision.

As with any new experimental surgical procedure, many patients were operated upon in the early days, whom we would not now consider suitable for this method. The operation is now limited to those patients whom we know by experience to have an excellent chance to regain serviceable hearing. Suitability for operation can only be determined by careful examination. As would be expected, the window operation is not successful in any cases of nerve deafness. This was realized from the inception of the operation. The few operations performed on these people were uniformly unsuccessful. Many resulted in even further loss of hearing in the operated ear. No surgeons are now operating on these cases.

The operation is most successful when performed on those people with a pure conduction deafness without any degree of nerve involvement. This patient is only occasionally seen. Almost all show some degree of nerve involvement.

The second group presents a well preserved nerve, but there is some loss of nerve acuity, as shown by lowered bone conduction of sound, in the middle lower frequencies. Unfortunately, this is the most important part, because this is the range of the human voice frequencies. These patients can be promised probability of a good result. If the nerve acuity has not dropped below a certain level, there is a good expectancy that the hearing by air conduction will rise to a serviceable level. In any series of cases, this group will comprise the largest group.

The third group on whom operation may still be performed is that group in which the nerve function in the middle low (conversational frequencies) frequencies has dropped below the level where a good conversational hearing result may be obtained. But the nerve acuity is good in the very high and very low frequencies. Altho these patients usually must continue to wear a hearing aid, they are able to hear doorbells, telephones, alarm clocks, etc. Many patients elect to undergo the operation solely for this benefit.

Age in itself is no bar to the opera-

tion. The sole criteria is the status of the nerve of hearing itself. Successful operations have been performed on patients in the seventies, but **this is** quite unusual. Children are usually not operated upon until after the age of eight. This is because of the difficulty of reliable examination in a younger child.

In even the most successful cases, a certain percent will grow new bone over the window. This causes the hearing to return to the preoperative level. Unfortunately, nothing has yet been devised to make certain that the window will remain open. There is no way of telling which cases **will remain open**, and which will close. If the window, remains open for a year, few will close. Practically none that remain open for two years close.

Reoperation can be performed in those cases in which the window closes. The reoperation is not as difficult, nor does it take as long as the original operation. However, a very high percent of these patients close again.

In summary, the fenestration or window operation is performed on patients with otosclerosis, a form of conduction deafness. In carefully selected patients, a good immediate result can be expected in almost all cases. But a certain percent of these successful cases will grow new bone over the window. The operation is difficult to perform, and requires a high degree of skill on the part of the surgeon.

YOUR POND—A PUBLIC HEALTH RESPONSIBILITY

By

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State Director, Malaria Control
N. C. State Board of Health

What is Malaria?

The word "malaria" is derived from two Italian words: "mal" meaning bad, and "aria" meaning air. As its etymology indicates, the term was originally used to show the connection between the disease and the foul air emanating from marshes and swamps.

In 1880, a French Army surgeon named Lavarán found small organisms in the blood of patients suffering from the disease: Later, they were proved by him to be the parasites which cause malaria. In 1897, Sir Ronald Ross, an English Army surgeon, proved that in avian malaria these parasites were



Clean ponds with steep shore lines seldom become public health problems.

transmitted from one bird to another through the bite of a mosquito. It was later demonstrated by Grassi, an Italian scientist, that malaria parasites were transmitted by mosquitoes from one human being to another. Even though it was discovered that the term "malaria" embraces several diseases caused by separate species of closely related parasites, the name has been retained.

There is only one known natural method by which malaria can be transmitted from one person to another—through the bite of an anopheline mosquito. In North Carolina only one species, the *Anopheles quadrimaculatus*, can carry this disease. As the malaria mosquito is not able to pass the infection from mother to offspring, the only method by which she can become infected is by taking a blood meal from a person suffering from the disease. If a community is free of malaria, the mosquitoes will not become infected,

but if an infected person should move into the community or merely stay overnight and is bitten by malaria mosquito, this mosquito becomes a potential spreader of the disease and may infect several other persons who in turn will infect other mosquitoes. Eventually, the entire community may become infected.

Mosquitoes

Over fifty different kinds of mosquitoes have been found in North Carolina. When viewed under a microscope, the different mosquitoes look no more alike than the various species of birds resemble each other. Their breeding, flying, and feeding habits also vary greatly with different species. Some will breed only in receptacles having artificial bottoms—such as, tin cans, flower vases, or old rubber tires containing water. Many species breed in foul water or water having a high acid content, while others

prefer large bodies of reasonably fresh, clean water. Certain species of mosquitoes will fly 30 or 40 miles, while others rarely go over a quarter of a mile from their breeding places.

The mosquito which carries malaria in North Carolina seldom flies more than a mile if a blood meal can be found nearer. They breed in ponds, ditches, and other bodies of reasonably fresh, still water where the acidity is not too high. Where the shade is not too dense, they are often found breeding in swamps. Conditions favorable for the breeding of malaria mosquitoes are: a constant water level, collections of flotsam and other debris, aquatic vegetation which pierces the water surface, little or no wave action, slightly alkaline or neutral water, and the absence of natural enemies of mosquito larvae, such as top minnows.



Malaria History in North Carolina

For several centuries, after North Carolina was colonized, most of the population depended entirely upon the pursuit of agriculture. Transportation facilities were poor, making it necessary that practically all articles of food or clothing be produced locally. Almost every community had a water mill that ground the wheat and corn raised by the surrounding farmers. The ponds furnishing the power for these mills were ideal places for the propagation of malaria mosquitoes, causing malaria to be prevalent throughout the Piedmont

as well as in the eastern section of the state. Industrialization and improvement in transportation resulted in the abandonment of most of these mills. The dams gradually washed out and the number of ponds became smaller and smaller. A recession in malaria followed in the Piedmont area. In recent years, the high incidence of the disease has been confined almost entirely to the eastern part of the State where numerous natural breeding places for malaria mosquitoes existed.

In the following table the deaths reported clearly illustrate that a marked diminution has taken place in the incidence of malaria in North Carolina. It will be seen that the reported deaths from the disease have gradually fallen from 150 in 1936 to 0 in 1948. For the first in history of vital statistics, a whole year has elapsed without a single death from malaria being reported. The cases reported do not draw as clear a picture of the decline; neither are they as accurate. Increased interest following the initiation of control measures in a locality frequently results in a climb in reported cases of malaria. This does not necessarily mean that non-existent malaria is reported, but cases that hitherto would have failed to receive recognition assume greater importance in the eyes of the reporting officials.

The blood slide results shown in the table were obtained from slides taken on routine surveys among school children through the first six grades in counties regarded as being malarious. The picture drawn here closely parallels that shown under mortality. From the blood slide data, it would appear that malaria disappeared from the State in 1946. The blood slides taken outside the routine surveys show that this is not true. In 1946, 1263 slides were examined by us at the request of practicing physicians to confirm their diagnosis. Fifty-six of these were positive for malaria. In 1947, 1094 such slides were examined, 33 of which were positive. In 1948, of 976 slides examined, malaria parasites were present in only 3.

Year	Cases Reported	Deaths Reported	Routine Blood Slide Surveys in School		
			Slides Taken	Slides Positive	Slides Positive Per Thousand Examined
1936		150			
1937	876	87	9,817	349	35.5
1938	636	70	12,937	105	8.1
1939	629	51	19,199	265	13.9
1940	629	61	8,479	15	1.8
1941	237	29	8,835	50	5.7
1942	248	33	23,226	15	0.6
1943	183	22	40,877	10	0.9
1944	151	25	No Survey Made	—	—
1945	552	24	18,436	10	0.8
1946	368	9	13,390	0	0.0
1947	137	2	5,769	0	0.0
1948	147	0	2,203	0	0.0

Control Measures Employed:

Prior to the beginning of the Work Relief Program, begun during the depression of 1929, numerous large and small bodies of water were to be found almost anywhere in the eastern part of the State. Many of these were prolific breeders of malaria mosquitoes. In 1933, the CWA furnished manpower to drain such places that were considered hazards to the public health. This drainage was sponsored and supervised by the North Carolina State Board of Health. The ERA and WPA, which were subsequent relief agencies, continued to provide personnel for malaria control drainage. This activity continued until the beginning of World War II.

Throughout this period, an average of 1,959 men worked each month on malaria control drainage; 2,956 miles of hand ditches and 372 miles of machine canals were dug to drain 98,606 acres of water surface. An additional 72 acres of ponds were eliminated by filling.

During the war years, an extensive drainage and larviciding program for the control of malaria mosquitoes was conducted by the N. C. State Board of Health with funds provided by the United States Public Health Service around military establishments, principal liberty points for troops, and industrial centers having military significance.

On this program, 339 miles of hand ditches were cut, 6.1 miles of canals excavated by heavy machinery, and 20.7 miles of ditches blasted with dynamite. To prevent breeding of malaria mosquitoes, 221,555 gallons of fuel oil were applied to the water.



98,606 acres of water was drained.

The discovery of DDT provided another method for combatting malaria. In 1945, 4,603 homes in malarious sections were sprayed with DDT. In 1946, this number was increased to 40,683. The expansion of this program continued and in 1947, 58,091 homes were sprayed; in 1948, 81,669 were sprayed.

The reduction in malaria shown in the preceding statistics is generally considered to be the result of these control measures, together with better medical care of the population and improved economic conditions.

Pond Construction:

During recent years, pond building on a large scale has been underway in North Carolina. This is largely due to promotional efforts on the part of the U. S. Soil Conservation Service and other governmental agencies.



372 miles of canals were constructed with heavy machinery.

In order to prevent the creation of the type of ponds which might invite malaria mosquito breeding (ponds containing constant water level, drift, flotsam, or vegetation), a regulation was adopted requiring the prospective pond-builder to secure a permit from the N. C. State Board of Health. This law concerns any body of water formed by the construction or excavation of a basin or the obstruction of a stream flow in such a manner as to cause the collection of a body of water which would not have formed under natural conditions. Ponds covering less than $\frac{1}{4}$ of an acre are not included in these regulations. Before issuing a permit, the State Board of Health requires that an application be submitted on a form provided by them. This application provides for a description of the pond and includes an agreement for complying

with the regulations, requiring that the pond be constructed and maintained in such a manner that it will not produce anopheline mosquitoes and become a menace to the public health.

When an application is received, someone from the Malaria Control Unit of the North Carolina State Board of Health or the local health department inspects the site. If it is found to be satisfactory, a Construction Permit is given the owner. This permit merely authorizes him to build the dam and prepare the basin, but does not permit the impoundage of water. After the construction is completed, another inspection is made to determine whether or not all the requirements have been met. If the construction meets the requirements, an Impounding Permit is issued. This permit can be revoked in the future if the pond is not satisfactorily maintained.

In 1948, 489 applications were received and 292 Impounding Permits were granted. Through March of 1949, 204 applications have been received. Construction has not been completed on some of the ponds for which permits were applied and others have not been finished in accordance with the State Board of Health Regulations. At this time, there are 1,845 new ponds on record in addition to 230 old ponds for which permits are not required. Applications for ponds that have already been built or are now being constructed show that they have a combined area of 18,459 acres. These ponds provide a water surface 18.8% as great as that which was eliminated by the drainage program previously conducted as mentioned above. If the present rate of construction continues, in a few years new potential malaria mosquito-breeding surfaces may equal in area or surpass that which was destroyed on the drainage program. This is a situation to be viewed with alarm. The extent and scattered location of these ponds preclude the possibility of their being given adequate inspection and supervision by the public health authorities. It is becoming more and more necessary that the owners realize their responsibilities and be

in a position to carry their own maintenance without constant public health supervision; otherwise, it is highly probably that satisfactory maintenance will be neglected. This could easily result in a climb in the incidence of malaria to a point never reached before.

The North Carolina State Board of Health and local health departments have no desire to discourage the construction of ponds which are properly designed, constructed, and maintained, but it is their duty to the public to do everything possible to prevent the creation of malaria hazards.

Unless judgement be exercised in the selection of the site, as well as the design and construction of the pond, satisfactory maintenance can become a very expensive problem. The topography of the site should be such that when the water is impounded very little or no shallow water of less than 2 ft. in depth lies within the area.

In the area to be occupied by the impounded water, all trees, undergrowth, logs, stumps, and other objects, which if not removed would float or collect flottage on the surface of the impounded water, and all of the above material that is lying on the ground which would probably cause the collection of flottage, should be removed, burned, or otherwise satisfactorily disposed of. All trees and other growth which would pierce the water surface at minimum low water level should be cut down or cut off at least one ft. below such water surface to prevent the collection of drift or flottage.

A bottom drain or other means must be provided which will permit the removal of the water and flashboards or other means provided so that the fluctuation of the water level can be controlled at any season of the year.

Pond Maintenance:

On small ponds which have been properly planned and constructed, satisfactory maintenance can usually be accomplished by keeping the shoreline free of drift, flottage, and marginal vegetaion. A "clean" pond, as men-

tioned previously, practically eliminates the malaria mosquito-breeding problem. A special effort should be made to prevent the introduction of aquatic plants, such as bulrushes, cattails, and parrot feather. Periodic inspections should be made around the edges of the pond and if aquatic vegetation is found, it should be removed at once to prevent spreading. A few bulrushes or cattails can be pulled up and removed from the pond with very little trouble. If they become established on a large scale, their removal will constitute a difficult and expensive undertaking.

Fluctuation of the water level aids greatly in discouraging the growth of vegetation. During the winter and spring months the elevation of water in the pond should be held at the maximum until the beginning of the malaria mosquito-breeding season, which is usually around the middle of April or the first of May. Then by dropping the elevation sharply for one or two feet, much objectionable flottage will be stranded. Fluctuation should be continued with a gradual draw-down throughout the summer and early fall. The water should be periodically raised and lowered within the fluctuation limits. By holding it up for about a week, much of the terrestrial vegetation along the margin would be drowned. When it is lowered, the drying out will kill a large part of the aquatic vegetation. Each time the water is raised, the elevation should be one or two inches below the previous high level.

In ponds which are kept clean of vegetation and flottage, small fish, such as the Gambusia or top minnow, if kept in the pond in sufficient numbers, will destroy mosquito larvae before they develop into adult mosquitoes.

On small ponds it should not be necessary to use larvicides if they are properly constructed and kept clean. Several toxic materials can be successfully applied to mosquito-breeding areas. Paris green mixed in the proportions of one to twenty with an inert dust, such as talc or lime, is very effective for the control of anopheline mosquitoes, but kills very few of the other species. As

only this genus feeds at the water surface, petroleum oils, such as kerosene or No. 2 fuel oil, when applied to the surface, kill all types of mosquito larvae and for that reason are usually preferred. The oils can be applied with various types of equipment designed for that purpose. On small ponds an ordinary knapsack sprayer, equipped with a Bordeaux nozzle, has been found to be very satisfactory.

Summary:

Ponds containing vegetation and trash or which have no fluctuation of the water level are favorable for malaria mosquito breeding.

The law requires that a permit be obtained from the N. C. State Board of

Health before building a pond in excess of $\frac{1}{4}$ acre.

During the last 15 years, under the supervision of the N. C. State Board of Health, 98,606 acres of water surface has been drained and 72 acres eliminated by filling.

The rate of pond construction is constantly increasing. The N. C. State Board of Health has records of 1,845 new ponds and 230 old ponds with a combined area of 18,459 acres. This is 18.8% of the water surface eliminated by draining and filling.

The incidence of malaria has declined considerably during the last 15 years.

It is essential that ponds be designed, constructed and maintained correctly or a recurrence of high malaria rates seems likely.

NOTES AND COMMENT

by

ACTING EDITOR

OUR FRONT COVER—Arthur G. Raymond, Jr., born December 3, 1947, son of Mr. and Mrs. Arthur G. Raymond. Mrs. Raymond is the former—Miss Ethel Gray Clifton, pleasantly remembered as being at the Information Desk at the State Laboratory of Hygiene.

CHILD AND MATERNAL HEALTH—The year 1947 was a banner year for babies—not only were there more of them but a larger proportion of them lived to celebrate their first birthday. It was also a good year for their Mothers, since relatively fewer died in the process of bringing forth new human lives. These statements are true for North Carolina and for the nation as a whole. In our own State the birth rate rose from 27.7 in 1946 to 30.5 in 1947. For the nation the increase was from 23.5 in 1946 to 25.8 in 1947. The infant mortality rate in North Carolina decreased from 37.2 in 1946 to 34.9 in 1947. In the nation infant mortality was 33.8 in 1946 and in 1947 it was 32.2. The number of mothers who died in the process of giving birth to a new life was 1.6 for the nation as a whole in 1946. In 1947 the nation's maternal mor-

tality rate was 1.3. Our maternal mortality rate in North Carolina was 2.0 in 1946 and 1.7 in 1947.

When we compare the numbers and rates on page 15 we find that for 1947 only seven states had higher birth rates than North Carolina and that South Carolina had the same birth rate as North Carolina—30.5. New Mexico had the highest rate of 37.2; Alabama 31.0; Mississippi 31.7; Utah 33.9; Montana 30.9; and North Dakota 31.5. On page 16 you will find the provisional data for North Carolina by counties for the year 1948. While these are not complete or final figures they are approximately right. In 1947 we had 112,877 babies according to the official figures given on page 15. Presumably the number for 1948 is appreciably less, since only 107,155 had been recorded through January 1949. We would dislike to think that we had such poor reporting of births and deaths in North Carolina that more than 5,000 births occurring in 1948 were not represented by birth certificates filed with your Bureau of Vital Statistics by the end of January, 1949.

With the problem of infant mortality, the nation is making progress by reducing the rate for all the states from 33.8 in 1946 to 32.2 in 1947. North Carolina is doing fairly well—In 1946 the State's rate was 37.2 and 34.9 in 1947 but the provisional rate for 1948 is up to 35.4.

According to official figures for 1947 there were 12 states with higher infant mortality than North Carolina. In 1946—14 states and the District of Columbia had higher rates than we—while in 1945—13 states and the District of Columbia had worse rates than North Carolina. In 1947 we lowered our infant deaths but we have permitted other states to show greater improvement. Perhaps we can do better in 1949—at least we shall try. With our program to save those babies born prematurely or under weight we should show our own people and those of the nation that we do not belong in the lower third among the states of the nation.

North Carolina is doing something about its maternal mortality problem. The State Medical Society has a Committee which investigates each maternal death and endeavors to determine whether that death could have been prevented. The activities of this Committee has contributed much to the protection of motherhood in this State. Its work is reflected in the improvement of our maternal mortality rate. When we remember that for the five year period—1932 to 1936 our rate was 7.1 and that for 1947 it was officially 1.7, we can realize that the lives of a great many women have been saved. Improve as we may in North Carolina the states of the nation also improve. The rate for the nation in 1947 was 1.3 and only nine other states had higher maternal mortality rates than North Carolina—while 3 states Oklahoma, Texas and Tennessee had the same rate as we.

As we face the future we should not cast even a backward glance at our accomplishments for our own gratification but only for the purpose of developing a better program for the protection of our infants and our mothers as well as all the people of North Carolina.

STUDY WILL SHOW SUPPLY AND DISTRIBUTION OF NATION'S DOCTORS

CHICAGO—A study which will provide accurate information about the supply and distribution of doctors in the United States for the first time is being made by Frank G. Dickinson, Ph.D., Chicago, director of the American Medical Association Bureau of Medical Economic Research.

Using information furnished by state and county medical societies, Dr. Dickinson has divided the nation into 757 medical service areas, somewhat similar to the trade areas that have been used in studying buying and selling habits of the population.

Because doctors and patients often cross state and county lines to give and receive medical care today, the traditional methods of computing the supply and distribution of doctors by counties and states do not provide an accurate picture. The number of persons per doctor in any county is a meaningless figure, and the state is too large to be used as a medical service area.

A progress report on the study appearing in the current (April 9) issue of *The Journal of the American Medical Association* shows that every person in the United States lives in one of these 757 medical service areas and that there are doctors in each area on whom persons in the area usually depend for their medical care.

Although some persons live near the border of each medical service area and some live in counties that have no doctors, no one lives outside a medical service area.

People in each area obtain most of their medical care from doctors in that area. The average number of counties per area is four. The areas vary in shape and size and few of the boundary lines coincide with the boundaries of counties. Two hundred and twelve areas cross state lines and 545 are entirely within states. The larger areas are in the less densely populated western states, including Texas, New Mexico, Arizona, Nevada, and Idaho.

LIVE BIRTHS, INFANT MORTALITY AND MATERNAL MORTALITY UNITED STATES. AND EACH STATE, 1947

(PLACE OF RESIDENCE)

	Live Births		Infant Mortality		Maternal Mortality	
	Number	Rate Per* 1000 Pop.	Number	Rate Per 1,000 Live Births	Number	Rate Per 1,000 Live Births
United States.....	3,699,940	25.8	119,173	32.2	4,978	1.3
Alabama.....	88,116	31.1	3,301	37.5	231	2.6
Arizona.....	19,153	29.7	973	50.8	35	1.8
Arkansas.....	48,983	25.6	1,445	29.5	90	1.8
California.....	245,889	25.1	7,233	29.4	235	1.0
Colorado.....	32,874	28.7	1,234	37.5	42	1.3
Connecticut.....	45,581	23.1	1,150	25.2	31	0.7
Delaware.....	7,717	26.5	239	31.0	6	0.8
Dist. of Columbia.....	21,686	25.2	691	31.9	23	1.1
Florida.....	59,807	25.7	2,285	38.2	133	2.2
Georgia.....	94,944	30.3	3,251	34.2	241	2.5
Idaho.....	16,265	31.0	478	29.4	16	1.0
Illinois.....	196,007	23.3	5,672	28.9	204	1.0
Indiana.....	96,359	25.1	2,949	30.6	105	1.1
Iowa.....	63,858	24.6	1,817	28.5	59	0.9
Kansas.....	44,535	23.1	1,251	28.1	46	1.0
Kentucky.....	79,987	28.8	2,971	37.1	140	1.8
Louisiana.....	74,630	29.3	2,773	37.2	141	1.9
Maine.....	23,873	27.0	853	35.7	37	1.5
Maryland.....	56,687	26.5	1,794	31.6	59	1.0
Massachusetts.....	107,791	23.3	3,027	28.1	93	0.9
Michigan.....	161,085	26.5	5,080	31.5	173	1.1
Minnesota.....	75,577	26.2	2,165	28.6	46	0.6
Mississippi.....	66,450	31.7	2,448	36.8	173	2.6
Missouri.....	90,060	23.1	2,929	32.5	129	1.4
Montana.....	15,086	30.9	484	32.1	16	1.1
Nebraska.....	32,132	25.0	894	27.8	35	1.1
Nevada.....	4,041	29.1	134	33.2	5	1.2
New Hampshire.....	13,267	24.8	399	30.1	14	1.1
New Jersey.....	106,242	23.0	2,965	27.9	107	1.0
New Mexico.....	20,322	37.2	1,379	67.9	42	2.1
New York.....	323,250	22.8	9,123	28.2	325	1.0
North Carolina.....	112,877	30.5	3,938	34.9	192	1.7
North Dakota.....	17,064	31.5	523	30.6	19	1.1
Ohio.....	197,311	25.7	5,817	29.5	237	1.2
Oklahoma.....	53,684	23.5	1,733	32.3	89	1.7
Oregon.....	36,294	23.5	895	24.7	32	0.9
Pennsylvania.....	248,513	23.6	7,741	31.1	313	1.3
Rhode Island.....	18,536	24.9	522	28.2	17	0.9
South Carolina.....	59,470	30.5	2,352	39.5	155	2.6
South Dakota.....	16,539	28.6	511	30.9	17	1.0
Tennessee.....	86,619	28.0	3,144	36.3	150	1.7
Texas.....	198,662	28.0	8,161	41.1	306	1.5
Utah.....	21,724	33.9	545	25.1	17	0.8
Vermont.....	9,708	26.5	303	31.2	12	1.2
Virginia.....	85,740	28.6	3,142	36.6	144	1.7
Washington.....	58,481	24.8	1,643	28.1	63	1.1
West Virginia.....	55,085	29.3	2,091	38.0	88	1.6
Wisconsin.....	84,059	25.9	2,476	29.5	89	1.1
Wyoming.....	7,320	27.6	249	34.0	6	0.8

*Based on total population present in area

INFANT AND MATERNAL DEATHS WITH RATES PER 1,000 LIVE BIRTHS AND BIRTHS BY COUNTY—1948

(PLACE OF RESIDENCE)

COUNTY	Infant Mortality Place of Residence		Maternal Mortality Place of Residence		Total Live Births Place of Residence	COUNTY	Infant Mortality Place of Residence		Maternal Mortality Place of Residence		Total Live Births Place of Residence
	No.	Rate	No.	Rate	No.		No.	Rate	No.	Rate	No.
Alamance.....	38	21.0	2	1.1	1,807	Jones	14	40.7	.....	.....	344
Alexander.....	11	27.5	1	2.5	400	Lee	24	35.3	2	2.9	679
Alleghany.....	6	39.0	.....	.....	154	Lenoir.....	65	48.3	2	1.5	1,345
Anson.....	29	36.0	1	1.2	806	Lincoln.....	23	31.1	.....	.....	739
Ashe.....	17	29.0	.....	.....	586	McDowell.....	20	36.4	1	1.8	550
Avery.....	8	19.9	1	2.5	402	Macon.....	19	41.9	1	2.2	453
Beaufort.....	52	53.5	.....	.....	972	Madison.....	13	26.8	.....	.....	485
Bertie.....	34	41.6	1	1.2	818	Martin.....	29	36.3	2	2.5	799
Bladen.....	24	27.5	4	4.6	874	Mecklenburg.....	198	38.9	7	1.4	5,094
Brunswick.....	28	49.9	.....	.....	561	Mitchell.....	10	23.4	2	4.7	428
Buncombe.....	117	40.0	2	0.7	2,927	Montgomery.....	10	21.9	.....	.....	457
Burke.....	27	24.2	1	0.9	1,114	Moore.....	23	26.0	3	3.4	883
Cabarrus.....	44	27.4	2	1.2	1,607	Nash.....	87	50.6	7	4.1	1,721
Caldwell.....	42	32.3	1	0.8	1,299	New Hanover.....	82	49.1	3	1.8	1,671
Camden.....	4	32.8	.....	.....	122	Northampton.....	21	24.7	4	4.7	851
Carteret.....	14	25.2	.....	.....	556	Onslow.....	29	38.7	4	5.3	750
Caswell.....	27	45.6	3	5.1	592	Orange.....	21	26.4	.....	.....	794
Catawba.....	31	18.9	1	0.6	1,641	Pamlico.....	9	31.8	1	3.5	283
Chatham.....	14	23.4	4	6.7	599	Pasquotank.....	25	41.4	2	3.3	604
Cherokee.....	23	44.1	1	1.9	522	Pender.....	25	49.5	1	2.0	505
Chowan.....	17	45.9	1	2.7	370	Perquimans.....	9	34.6	.....	.....	260
Clay.....	6	50.0	1	8.3	120	Person.....	17	22.3	2	2.6	761
Cleveland.....	49	26.3	3	1.6	1,863	Pitt.....	81	44.1	2	1.1	1,838
Columbus.....	73	52.7	1	0.7	1,384	Polk.....	8	31.6	.....	.....	253
Craven.....	55	46.1	3	2.5	1,194	Randolph.....	32	26.3	1	0.8	1,217
Cumberland.....	91	31.3	8	2.7	2,911	Richmond.....	39	35.5	4	3.6	1,099
Currituck.....	3	24.0	.....	.....	125	Robeson.....	121	43.9	6	2.2	2,756
Dare.....	2	21.1	.....	.....	95	Rockingham.....	57	36.0	5	3.2	1,585
Davidson.....	58	37.6	1	0.6	1,542	Rowan.....	67	40.1	3	1.8	1,669
Davie.....	14	41.1	.....	.....	341	Rutherford.....	32	28.6	1	0.9	1,117
Duplin.....	44	35.5	6	4.8	1,241	Sampson.....	46	32.4	3	2.1	1,420
Durham.....	69	27.2	3	1.2	2,541	Scotland.....	39	50.6	2	2.6	770
Edgecombe.....	75	50.3	1	0.7	1,491	Stanly.....	33	33.1	5	5.0	996
Forsyth.....	109	30.0	7	1.9	3,635	Stokes.....	22	46.3	2	4.2	475
Franklin.....	41	50.9	2	2.5	805	Surry.....	37	27.9	1	0.8	1,326
Gaston.....	108	39.3	4	1.5	2,750	Swain.....	14	45.0	1	3.2	311
Gates.....	7	26.0	2	7.4	269	Transylvania.....	5	12.5	.....	.....	401
Graham.....	7	35.7	.....	.....	196	Tyrrell.....	1	8.1	.....	.....	124
Granville.....	27	32.3	1	1.2	836	Union.....	44	38.8	3	2.6	1,135
Greene.....	23	45.8	1	2.0	502	Vance.....	51	54.5	4	4.3	935
Guilford.....	124	27.5	6	1.3	4,511	Wake.....	105	31.6	6	1.8	3,319
Halifax.....	95	50.0	9	4.7	1,901	Warren.....	23	31.3	3	4.1	736
Harnett.....	41	32.3	4	3.1	1,270	Washington.....	19	51.4	.....	.....	370
Haywood.....	22	21.8	.....	.....	1,011	Watauga.....	18	39.7	.....	.....	453
Henderson.....	22	29.9	2	2.7	737	Wayne.....	56	37.0	1	0.7	1,514
Hertford.....	30	57.5	2	3.8	522	Wilkes.....	34	26.9	2	1.6	1,262
Hoke.....	18	42.0	1	2.3	429	Wilson.....	71	42.3	7	4.2	1,678
Hyde.....	6	35.5	.....	.....	169	Yadkin.....	14	26.7	.....	.....	525
Iredell.....	45	30.5	.....	.....	1,476	Yancey.....	10	23.8	1	2.4	421
Jackson.....	12	23.1	1	1.9	520	Entire State.....	3,791	35.4	205	1.9	107,155
Johnston.....	56	29.8	3	1.6	1,878						

*Data are provisional receipts through January 1949 for 1948 occurrences.



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Industrial Hygiene Mobile X-ray Unit.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
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Constipation	Infantile Paralysis	Teeth
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Don't Spit Placards	Padiculosis	Vitamins
Fly Placards	Pellagra	Typhoid Placards
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Flies	Disposal Plants	Whooping Cough

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care.	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile Diarrhea.	Nine Months to One Year.
Breast Feeding.	One to Two Years.
Table of Heights and Weights.	Two to Six Years.
	Instructions for North Carolina Midwives.

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INDUSTRIAL HYGIENE SERVICES, PRESENT AND FUTURE, IN NORTH CAROLINA

OTTO J. SWISHER, JR., M.D., Director,
and EMIL T. CHANLETT,

Associate Professor of Sanitary Engineering
of U. N. C. School of Public Health

The primary responsibility of an industrial hygiene unit is the control of occupational diseases. Occupational diseases are those specific pathological conditions that result from the excessive exposure to toxic gases, vapors, fumes or dusts, or from unusual intensities of physical energy such as ultraviolet light, x-ray, noise, or radioactive emanations. Common and notorious examples of causes of occupational diseases are carbon monoxide gas, benzol vapor, lead fumes, and free silica and asbestos dust. Exposure to these causative agents is not necessarily limited to occupational activities, but the circumstances of prolonged exposure to concentrations that do not immediately produce dramatic physiological failures are characteristic of jobs at industrial processes that have toxic substances as ingredients, products, by-products, or waste products, or are accompanied by the use and production of high levels of hazardous forms of physical energy.

A casual impression of the frequency of occupational disease cases obtained from the number of cases encountered in general medical practice and even general hospital ad-

missions would be that these are rare indeed. But when the number of cases is properly related to the limited number of individuals actually exposed to toxic materials at their jobs, the risk assumes large proportions and requires that industrial hygiene be included among health department services. Effective preventive methods are known and are economical to apply in the vast majority of hazardous exposures, although the introduction of new processes and materials confronts the industrial hygienist with an unending series of new questions. Beyond these realistic facts that urgently recommend the prevention of occupational diseases, a matter of practical administrative interest to health officers at all levels is that the activities of the industrial hygienist can be made the path by which the broadening preventive medical services of health departments can be brought to the industrial and adult population.

As all workers are not engaged in processes using toxic substances it is usual that only a few workers in each plant are under a potential hazard. The evaluation of each hazard-



Toxic fumes rise from ladle as molten brass is poured into molds.

ous exposure requires very specialized knowledge and techniques of the physician, nurse, engineer, and chemist. As the number of persons with these skills is limited, and as their highly time consuming activities are required only in a few spots in each plant, it is possible to give state wide coverage for occupational disease control through a relatively small unit that is part of a state department of health. There are about

50 governmental industrial hygiene units in the United States and all but four or five operate at the state level. Such industrialized centers as Cleveland, Los Angeles, and Baltimore have industrial hygiene units included in the local health department services. An evident working necessity that can be providentially beneficial to all is a cooperative promotion of the services of each other by the state industrial hygiene unit

and the local health unit. To do this, the industrial hygiene unit must know the service activities that the local health unit is prepared to extend to industry, and the local health unit must know what industrial hygiene has to offer.

The North Carolina Division of Industrial Hygiene carries on field investigations of potentially hazardous exposure to toxic substances and physical energy forms; the medical

control through x-ray and physical examination of workers in trades covered by the Workmen's Compensation Act; and consultant medical and nursing service for the purpose of diagnosing occupational disease, and for the purpose of setting up or improving a plant's own medical facilities which are maintained for pre-placement physical examinations, accident injuries, and dispensary handling of miscellaneous ill-



Collecting air dust sample with portable equipment to determine the exposure of stone cutter to injurious silica dust.

ness occurring during a day's work. The present extent of these services is indicated by a review of the Division's activities during the past year.

Supervision of the Dusty Trades

There are about 250 establishments in the State engaged in asbestos textiles, quarrying, mining and ore processing, founding and casting, and stone cutting that expose their employees to the potential hazard of free silica and asbestos dust. Under the N. C. Compensation Act, silicosis and asbestosis are specifically compensable disabilities. Under agreement with the N. C. Industrial Commission, the Division of Industrial Hygiene of the State Board of Health is responsible for the continuous medical and environmental supervision of these establishments and their employees by physical examinations, x-rays, air sampling and dust counts, and by study of proposed and existing ventilation systems. In the past year the Engineering Section visited 140 of the 200 establishments carrying on the necessary air sampling. Reports of these investigations are sent to management, the Industrial Commission, the Labor Department, the Compensation Rating and Inspection Bureau. The latter is a creation of insurance companies to clear all available information useful in determining occupational risks and premium loadings.

Concurrently systematic physical and x-ray examination of dust exposed workers has been conducted. The medical director of the Division maintains a complete file on all such workers since their entrance into the dusty trades in this State. Such histories, coupled with the Engineering Section's records of dust counts and free silica determinations, are decisive evidence in silicosis and asbestosis claims. The N. C. Industrial Commission is dependent upon the Division for this evidence in judging

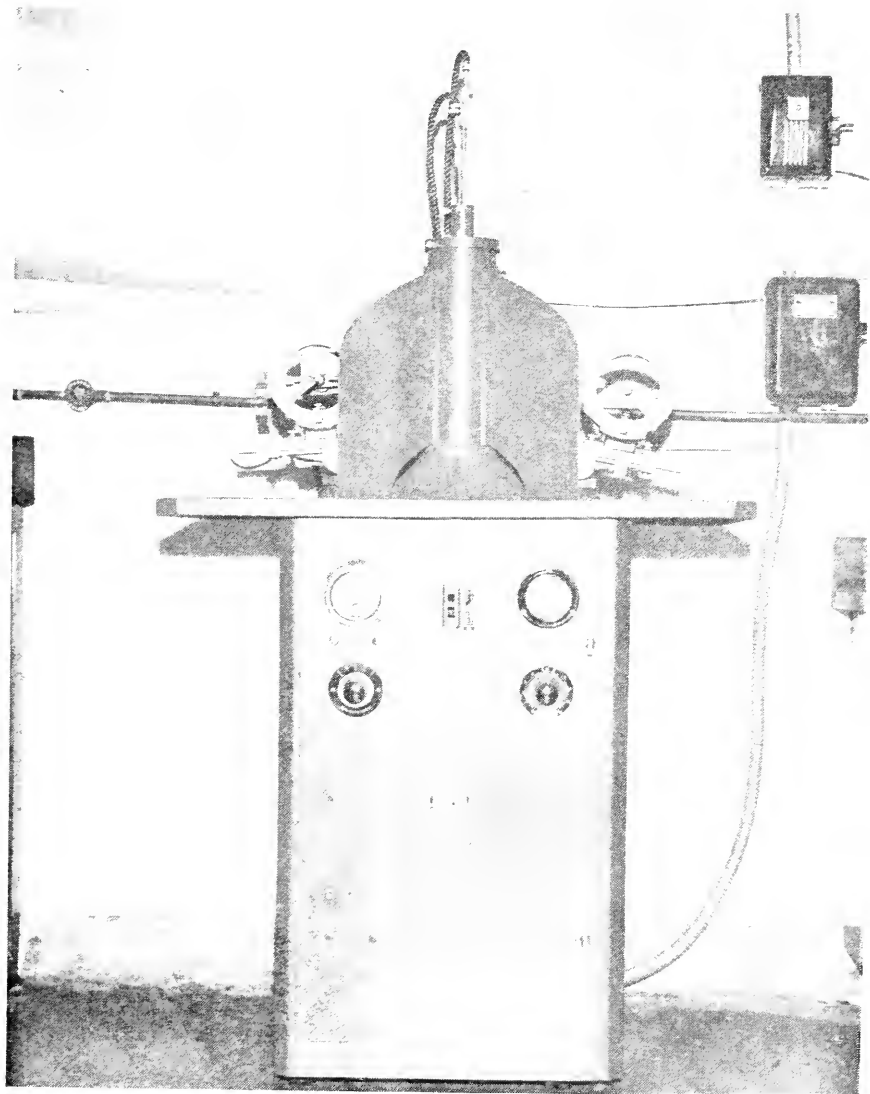
these claims. The Division Director and medical officer is the chairman of the Advisory Medical Committee of the Industrial Commission and in this capacity he is the medical consultant in all hearings of the Commission involving exposure to silica and asbestos dust.

Industry Wide Surveys

The initiation of occupational disease hazard surveys by analyses of processes, workroom observation, air sampling, and ventilation measurements is an accepted and effective way to introduce occupational disease control services to industry. In the past year the Division of Industrial Hygiene has initiated surveys in fertilizer manufacturing plants where acid vapors can be hazardous, in the hosiery mills and cellophane printing shops where dangerously radioactive electro-static controllers were being installed, and in the insecticide mixing plants where ingredients toxic to man must be handled. The surveys of the fertilizer plants, cellophane printing shops and hosiery mills have been completed, while that of the insecticide mixing plants continues in progress. The industry wide approach has been difficult to execute in North Carolina due to the geographical spread, the frequency of small sized plants, and usual absence of management trade associations that are helpful in sponsoring and rendering such surveys permanently productive.

Special Request Studies

During the past year engineering studies were made in ten plants at the request of management to evaluate occupational disease hazards from contaminated air. The problems encountered and studied involved such things as chromic acid mists, lead and zinc fumes, spray paints, other organic solvents, and siliceous abrasives. The plants included such diversified processes as manufactur-



X-ray diffraction unit used in the analysis of dust samples collected in the field.

ing of agricultural machinery, rubber products, mirrors, glue, storage batteries, electrical equipment and metal smelting.

The part time services of a public health nurse skilled in the orientation of nursing programs in indus-

trial plants has made it possible to offer management assistance in the field of industrial nursing. The consultant nurse aids plants in establishing a nursing service, advises industrial nurses desiring to improve their programs and activities in the

plant, assists in the recruitment of nurses to the industrial nursing field, and establishes a valuable contact between the activities of nurses in public health and in industry.

Such requests for services are sensitive measures of the success of the Division in promoting management's recognition and understanding of occupational disease prevention. The number of such requests depends on the quality of service rendered in the dusty trades and in industry-wide studies, but a moderate degree of public explanation of the Division's services before management and labor groups, and other State and Local governmental agencies which serve industry on the functions of the Division of Industrial Hygiene would be helpful, and the stimulation of local management's interest in occupational disease by the local health officers would be productive.

Development of Methods and Personnel

During the past year two new pieces of equipment that place the Division's dust analyses on a par with the best in the country have been put into use, a polarizing microscope and an x-ray diffraction unit. In-service training was made possible through the Public Health Service for operating the latter piece of equipment. Further training in measurement of radiation hazards was secured through the Public Health Service to be ready to meet the industrial application of radioactive materials, and to better deal with already present exposure problems from x-ray units, fluoroscopic shoe-fitting machines, and radioactive electro-static controllers. The need for an industrial nursing consultant has been satisfactorily met by the part-time services of one of the State's District Nurses who is eminently qualified by training and experience for these duties. The present roster of the Division con-

sists of one physician, who is the Director and medical officer; two engineers; one chemist; a part time nursing consultant; and an x-ray technician. The budgeted table of organization is not filled. There are vacancies in each of the professional categories.

Future Activities of the Division of Industrial Hygiene

1. There shall be no curtailment of the activities among the dusty trades as the Division must discharge this State-wide responsibility as its first obligation. Methods are being tried for increasing the completeness and speed of compliance with dust control recommendations.

2. Studies of occupational disease hazards in the furniture factories, and textile mills are needed and can be initiated this year if an additional person is added to the Engineering Section.

3. A closer contact with local health units shall be maintained by calls on the local health officer when persons of the industrial hygiene unit are carrying on studies within the local jurisdiction.

4. An experimental area shall be sought in which the industrial hygiene unit will carry on occupational disease hazard surveys among all the industrial establishments of a single health unit, and means developed for bringing together the activities of industrial hygiene and local public health units so that maximum of health improvement services can be brought to the adult working population.

5. There shall be an increase of consultant work from the Division to physicians and nurses in industry to better in-plant medical and nursing services. Such consultation is not limited to occupational disease problems, but extends to the promotion of new and improved plant medical services.

BORDEN MILLS GET NEW GEAR *

Modernization of Goldsboro Plant Costs \$250,000; More Planned

By CHARLES BOND

Goldsboro. — Borden Manufacturing Company, which will celebrate its 50th anniversary early next year, has already spent \$250,000 on modernization and more expenditure is planned under the continuing program. That was the estimate placed on the cost to date by William A. J. Peacock, superintendent, and Harry Muir, personnel manager.

The modernization was planned several years ago and the machinery ordered in 1941. The war delayed the process until last June when new installations were started.

New installations include opening equipment, where the bales of raw cotton are opened; one new unit for picking, cleaning and feeding; 10 new fly frames for putting twist into loose heavy string of cotton and winding on bobbins; and 23 new spinning frames. Eleven of the new spinners are replacements and 12 are new, increasing production 16 per cent and requiring employment of 10 more workers and two supervisors.

All machines in departments where new equipment was added were overhauled and converted to the same type as the new machines. An automatic vacuum stripper was installed to reduce the lint flying in the air. Twenty-four drawing frames were overhauled. These combine six heavy strings of cotton or sliders into drawing sliders.

Buildings Joined

To install the new picker, the opening and picking rooms of the buildings were joined, taking in 10 more feet into the building from the ground floor through the second floor. New 20-year roof has been put on the buildings housing the

equipment. Twelve skylights were installed.

In the No. 2 mill east of William Street all nine winders had to be moved 20 feet to make room for the new spinning frames. All floors were sanded, sealed and buffed with steel wool. They will be sanded periodically.

A new air compressor was installed for cleaning mill and machinery daily. Offices were built for overseers in both mills and **canteen** installed in each mill where employees can get light lunches.

Color Dynamics

All machinery has been painted according to Pittsburgh color dynamics. Orange denotes danger points. Vista green is the color of the machines. Fire equipment is red. Walls are eyerest green. Various shades of these colors are used with the softness of these pastels easing the eye strain of employees. Work has started on painting beneath the machines with an oil resistant gray.

The company employs 224 people and has a weekly payroll of approximately \$8,000. The company owns 67 houses, including one large duplex. **Last year \$20,000 was spent putting in new bathrooms in all the houses.** All houses have been re-roofed and painted in the past two years. Shrubbery was planted in 1947.

The mill was chartered January 6, 1900, by F. K. Borden, Sr., who was first president; E. B. Borden, Jr., treasurer; F. J. Davis, vice-president and manager, and Frank Broadhurst, secretary. In 1907 Paul Borden became secretary and treasurer. In 1921 E. B. Borden, III, who is president now, joined the company.

*From *News & Observer*, March 20, 1949.

Growth of Company

The company started with what is now well known as Mill No. 1, the one west of William Street. There were 5,000 spindles, one opener, two pickers, 15 cards, 18 spinning frames and four winders. Recent additions give the mill now 23,112 spindles,

two opening units with four hoppers each, four picking units, 97 cards, 94 spinning frames and nine winders.

Mr. Muir said he wished more people would visit and tour the mill. Plans are being shaped now for holding an open house in connection with the 50th anniversary next year.

1949 HEALTH LEGISLATION

SENATE BILLS

1. SB 5 requires all State Departments and agencies making rules and regulations to file indexed copies with each Clerk of the Superior Court and each member of the Legislature within 90 days after March 17, all amendments and new regulations to be filed with the Superior Court Clerks within 15 days after passage.
2. SB 51 sets up a State Personnel department, to which will be transferred certain duties with regard to salary and personnel classification formerly performed by the Assistant Director of the Budget.
3. SB 96 defines a premature baby as one weighing less than 5½ pounds at birth and requires that each such baby be reported to the local health officer in 24 hours; bill designed to facilitate State Board of Health program for saving such babies.
4. SB 110 provides for the enforcement of rules and regulations of district health departments and places these departments on same basis with county departments with respect to making and enforcing health regulations.
5. SB 111 provides that certified copies of birth certificates be issued in card form, omitting names of parents except when specifically requested.
6. SB 112 provides that birth and death certificates follow the forms used by the National Office of Vital Statistics and permitting amendments by the State Registrar.
7. SB 113 reduces the price of bedding inspection tags from \$10 for 500 to \$8 for 500.
8. SB 147 extends injunctive powers to local health officers and the State Board of Health, in revoking the licenses of cosmetologists who persist in violating sanitary regulations.
9. SB 167 establishes a single Board and County Health Department in Guilford County in place of three which have existed; namely, Guilford County, Greensboro and High Point.
10. SB 297 is designed to permit broader participation in cancer clinics by practicing physicians, by modifying requirements regarding Board Diplomates.
11. SB 320 regulates the distribution of milk and cream brought to North Carolina from other States and places enforcement with the State Department of Agriculture.

HOUSE BILLS

1. HB 33—Public health appropriations:

1949-1950	—	\$1,939,386
1950-1951	—	1,937,581

 Appropriations for the coming biennium include an increase over those for the biennium now drawing to a close, which were:

1947-1948	—	\$862,264
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1948-1949 — 860,904

The \$800,000 in new money voted for each year of the coming biennium will be used for local health work which for this biennium was allowed only \$350,000 a year. This amount has been increased during the next biennium to \$1,150,000 a year.

2. HB 203 provides new type certificates for adopted children omitting the names of their real parents and giving names of adopted parents.
3. HB 236 requires that copies of birth and death certificates of non-residents be sent to the counties of their residence.
4. HB 411 requires the reporting of cancer to local health officers within 5 days after diagnosis or within 5 days after reasonable evidence that one has cancer.
5. HB 457 changes the method of paying local vital statistics registrars, counties paying all fees, cities being relieved of further financial responsibility.
6. HB 602 further strengthens and clarifies the law placing the sale of barbiturates and certain other hypnotics and pain relieving drugs under medical supervision.
7. HB 623 provides for the improved care of chronic alcoholics and carries an appropriation of \$150,000 a year for the coming biennium.
8. HB 643, which would have permitted cities and towns to use surplus and unappropriated funds to erect better public health quarters, died on the Senate Calendar Committee after it had passed the House.
9. HB 686, which was given an unfavorable committee report and did not reach the floor, would have permitted osteopaths to administer drugs for the relief of pain.
10. HB 807 amends the law licens-

ing chiropractors, as to meetings of the Board of Examiners, but a clause permitting chiropractors to issue death certificates was stricken from the bill.

11. HB 835 provides for the appointment by the Governor of a Commission to consider ways and means for improving the status of the mentally handicapped.
12. HB 913 provides for the issuance of bonds by municipalities to finance sewer systems and sewage disposal plants.
13. HB 1064 allows counties participating in a district health department to voluntarily elect to participate in local government employees' retirement systems to the extent of the amount of salaries paid employees of such district by the county.
14. HB 1326, designed to regulate lobbying by heads of State Departments, was defeated.

The 1949 General Assembly, while it did not go as far as we requested, in the matter of appropriations, proved to be very cooperative in the matter of health legislation. As to appropriations for public health work, the total authorized for the biennium of 1949-1950 was \$1,939,386 and for 1950-1951, \$1,937,581. This represented an increase of \$800,000 for each year over the amount recommended by the Advisory Budget Commission. The appropriation for the present biennium was \$862,264 for 1947-1948 and \$860,904 for 1948-1949.

A summary of bills passed which either had the active approval and support of the State Board of Health or were introduced at its instigation is herewith presented:

A very important amendment to the cancer law supported by the State Board of Health made cancer a reportable disease. It was felt that this would prove beneficial in the prosecution of the cancer program now well underway. In addition to making cancer reportable, an amend-

ment also modifies the requirements of the State Board of Health's Bureau of Cancer Control by providing that "each physician who shall staff such organization, board, or clinic, must be a diplomate of the American Board of the Medical Specialty in which he is engaged, or one who has been approved by his County Medical Society or its duly appointed representative and the Division of Cancer Control of the North Carolina State Board of Health." This particular amendment will allow a fuller participation in the Cancer Control Program by local physicians. Several of the laws prepared by the 1949 General Assembly had to do with vital statistics. The first of these provided for a change in the method of paying local registrars. Effective March 11, 1949, the counties pay all fees for registration—the cities being relieved of further responsibility for payment. The second Vital Statistics bill has to do with the birth and death of county non-residents. It requires the State Board of Health's Bureau of Vital Statistics to forward copies of birth and death certificates of non-residents to the county of residence. This should be a help to health officers in follow up of new born infants and contagious disease deaths.

A third piece of Vital Statistics Legislation that was passed by the recent Assembly has to do with adopted children. It provides for new birth certificates in such cases to be issued so as not to reveal the names of the original parents, the attending physician or place of birth.

Another Vital Statistics bill provides that birth and death certificates in the future be issued on standard forms adopted by the National Office of Vital Statistics with such amendments as the State Registrar shall adopt. The last piece of Vital Statistics legislation enacted provides that the form of a certified copy of birth certificate shall be that of a birth registration card not spe-

cifying parentage except when specifically requested.

Due to the fact that proceeds from the Bedding Inspection Fund cannot be spent for any other purpose, but must be kept in reserve, except that portion spent for actual administration of the inspection law, a bill was introduced requesting the reduction in cost of stamps from \$10.00 to \$5.00. As finally passed, the figure was fixed at \$8.00, to take care of any contingencies which might arise.

A bill which imposes extra responsibility on local health officers and the State Board of Health has to do with cosmetologists. Heretofore, the revocation of licenses was purely a matter for the State Licensing Board. As amended, the law provides that the State Licensing Board, the Local Health Officer the State Board of Health may institute injunctive proceedings and close shops if found to be continually violating sanitation regulations.

One of the most beneficial and far reaching pieces of constructive legislation adopted by the 1949 General Assembly was a bill sponsored by the State Board of Health and termed the prematurity bill. This bill specifies the definition that all infants who do not weigh in excess of five pounds, 8 ounces are premature regardless of the period of gestation. The real purpose of this legislation was to make possible the execution of a far reaching plan of the State Board of Health for caring for premature babies. Under this law the physician or midwife who delivers a premature child outside a hospital is required to report the birth to the Local Health Department within 24 hours after delivery so that prompt arrangements can be made for hospitalization.

Two new laws enacted by the 1949 General Assembly affect Local Boards of Health. One provides for the enforcement of rules and regulations of a District Health Depart-

ment and places District Health Departments on the same basis as County Health Departments with respect to enforcement, McDowell County was excepted. The other allows counties participating in a District Health Department to voluntarily elect to participate in the Local Government employees' Retirement System to the extent of the amount of salaries paid to the employees of such District Health Department by the County.

One of the bills enacted pertaining to local health units was that which created a Board of Health for Guilford County. Up to now, there have been three District Health Departments in Guilford County, which has the largest population of any County in the State. Two of these had their headquarters in Greensboro—that is, the County Health Department and the Greensboro City Health Department, while High Point, a little more than a dozen miles to the South of Greensboro, has had its own health department. The new law provides that the newly created Guilford County Board of Health shall be composed of seven members. The chairman of the Board of County Commissioners shall be ex-officio member of the Board of Health of Guilford County and the Chairman thereof. The other six members shall be elected as follows: Three shall be residents of Greensboro, one of whom shall be a physician recommended by the Guilford County Medical Society. Another shall be a dentist recommended by the Guilford County Dental Society. Two members shall be citizens and residents of High Point of whom one shall be a physician recommended by the County Medical Society and one shall be a citizen and resident of Guilford County living outside the corporate limits of either Greensboro or High Point.

In addition to measures either introduced or sponsored by the State Board of Health, there were certain

other bills enacted into the law which have a bearing on the health of the people. One of these places further restrictions about the sale of certain drugs, including amidopyrine, barbituric acid, cinchophen, dinitrophenol, pituitary, thyroid, or their derivatives. Prescriptions containing these drugs shall not be refilled, except on the specific authorization of the prescribing physician. It is further provided, however, that nothing in the above section shall apply to a compound, mixture, or preparation containing salts or derivatives of barbituric acid which is sold in good faith for the purpose for which it is intended and not for the purpose of evading the provisions of this Act. If—

1. Such compound, mixture, or preparation contains a sufficient quantity of another drug or drugs, in addition to such salts or derivatives, to cause it to produce an action other than its hypnotic or effect somnifacient action; or—
2. Such compound, mixture, or preparation is intended for use as a spray or gargle or for external application and contains, in addition to such salts or derivatives, some other drug or drugs rendering it unfit for internal administration.

There were two bills which were opposed by the medical profession, one of which was killed altogether, the other passed in modified form after the objectionable features had been voluntarily withdrawn. The bill that was killed in Committee was that which would have permitted osteopaths to virtually practice medicine by writing prescriptions for drugs to relieve pain.

The other measure had to do with the practice of chiropractic. The modified form in which the bill was allowed to pass without opposition from the medical profession applied only to meetings of the Board of Chiropractic Examiners and did not

alter the practice of the profession itself. Before the offending clause was withdrawn the bill would have permitted chiropractors to sign death certificates.

One measure which was supported and should have been enacted into law was House Bill 643. It was captioned "A bill to be entitled an Act to authorize the governing bodies of counties, cities and towns to pledge, encumber, or appropriate surplus funds, unappropriated funds and proceeds from alcoholic beverage control stores for the purpose of constructing public health centers and providing housing or quarters for local health departments." This bill was designed to promote the erection of more adequate local health quarters in a number of counties. The Public Health Committee of the House approved this legislation. It was then re-referred to the House Finance Committee, as it involved the raising of funds by taxes. It passed the House, but died on the Senate Calendar Committee.

An important measure sponsored by the Hospitals Board of Control and enacted into law by the recent legislature provides for an appropriation of \$150,000 a year for the next biennium to open a center for the care and rehabilitation of alcoholics. As originally introduced, this measure provided for a tax of one-half of one per cent on the retail sale of all intoxicating beverages. However, it was amended so as to carry a fixed annual appropriation.

Another measure sponsored by the Hospitals Board of Control and enacted into law provides for the appointment by the Governor of a Commission to make a study of the care of older people with symptoms of mental sickness and of younger and middle aged people who are feeble-minded and not capable of receiving normal training.

An Act designed to improve sewer and sewage disposal plants was that which broadens the powers of munici-

palities in the erection of such plants. The Act is described in Section I thereof as providing for the issuance of bonds "for the purpose of paying the cost of acquiring, constructing, extending, enlarging or improving a system for the collection, treatment and disposal of sewage either within or without or partly without the municipality and to pledge to the payment of such bonds the revenues of the sewage disposal system."

The Legislature rejected the proposed stream pollution bill which had the blessing of the Board of Health. The matter twice ran the gauntlet and twice was defeated.

Early in the session, a bill was introduced and passed which provided that every agency and administrative board of the State of North Carolina created by statute and authorized to exercise regulatory, administrative, or quasi-judicial functions must, within ninety days after the ratification of the Act, file with the Clerk of the Superior Court of each County in the State a certified, indexed copy of all general administrative rules and regulations, or rule of practice and procedure. The second section of the Act provides that, in addition to the original statement filed with each Clerk of the Superior Court, each agency or board above described must, within fifteen days after the adoption of any additional or amendatory rule or regulation, file with each Clerk of the Superior Court a certified, indexed copy of such new or amendatory rule or regulation. These rules and regulations then becoming a part of the records in each County.

An important bill, of interest to the State Board of Health in common with all other agencies of government, was that which established what is known as a State Personnel Department. Some of the principal provisions of the measure are as follows: to place certain grades and classifications of State employees un-

der the jurisdiction of the State Personnel Department; to establish annual increments for such employees; to provide for the progressive development of personnel policies and practices for State employees and to re-write Article II of Chapter 143 of the General Statutes of North Carolina." The establishment of the Personnel Department relieves the Assistant Director of the Budget of some of the duties which were formerly encumbered upon him, chiefly the regulation of salaries, hours of work, periods of vacation and sick leave, etc. This measure was sponsored by the North Carolina State Employees Association and had the endorsement of the Governor and the Departments affected by the measure. While hearings on the measure were lengthy and detailed and several amendments were made, it met with no serious opposition during its course through the legislature.

It is interesting to note that House Bill 1326 endorsed by Representative Gantt of Durham and others relative to lobbying by heads of State Departments was given an unfavorable report.

One of the laws enacted by the 1949 General Assembly has to do with regulating the distribution of milk and grain brought into the State of North Carolina from other states. Enforcement of this law was placed in the Department of Agriculture. No bill was introduced which treated the production or distribution of milk as a health problem. A Milk Study Commission appointed two years ago to draw up a suitable statewide milk bill prepared a majority report and a minority report was drawn up, but neither found its way to the legislative halls for action.

Hospital Legislation Enacted by General Assembly of 1949.

1. House Bill 601. The second paragraph of subsection (c) of Section 131-120 was rewritten to clarify the authority of the

Medical Care Commission. It is authorized to receive and administer any and all funds which may be provided by the General Assembly of North Carolina and/or by the Congress of the United States for the construction, operation and maintenance of hospitals, public health centers and related facilities.

2. Amendment to H. B. 31. An act to make appropriations for Permanent Improvements, etc., re Medical Care Commission. The title of the Appropriation for the Medical Care Commission for the biennium to end June 30, 1951, was changed from "To match the Hill-Burton Funds" to read as follows:

"1. For the Biennium 1949-51 for sharing in the cost of construction of Local Hospitals and Health Centers — \$6,826,972."

3. Senate Bill 198 authorizes and empowers the N. C. Medical Care Commission, at its discretion, to credit loans made to students of medicine, dentistry, pharmacy, and nursing for satisfactory service rendered in rural areas on a basis to be prescribed by the Commission.
4. Senate Bill 337 expands the authority of the Medical Care Commission to license hospitals. The licensing Act of 1947 made licensing mandatory for hospitals that receive construction grants. Licensing was optional with other hospitals. The amendments by the 1949 Legislature makes licensing of all hospitals in the State mandatory and a function of the Medical Care Commission, excepting privately-owned and operated mental hospitals which have been and will continue to be licensed by the State Department of Welfare. The amendments of 1949 also eliminated

the hospital licensing fee of \$10.

5. The 1949 Revenue Act, Chapter 105, was amended so as to exempt from the sales tax building and equipment materials used in non-profit hospitals, effective July 1, 1949. Materials used in publicly-owned hospitals already are exempt from the sales tax.
6. Senate Bill 19 authorizes hospital districts created by the N. C. Medical Care Commission that consist of a portion of a county to hold special elections for the levy of taxes and/or to issue bonds for hospital purposes.
7. Senate Bill 197—Gives the governing authority of any county, city or town, in its discretion, special authority to:
 - (1) Pledge, encumber, or appropriate funds from surplus funds, unappropriated funds or funds derived from alcoholic beverage control stores for the purpose of guaranteeing the operating deficit of any publicly-owned or non-profit hospital.
 - (2) Issue by counties, cities and towns by special authority of bonds, notes for the special purpose of building and equipping any publicly-owned or non-profit hospital and for the purpose of financing the cost of operation, equipment and maintenance of any such hospital or for guaranteeing any operating deficit of any such hospital, and to levy property taxes for the payment of said bonds and notes and interest thereon.
 - (3) The special approval of the General Assembly is hereby given to the governing authority of any county, city or town for the levying of a tax on property in addition to other taxes for general purposes, not to exceed ten cents (10¢) on the one hundred (\$100.00) dollars value of property annually for the purpose of financing the cost of operation, equipment and maintenance of any public-owned or non-profit hospital or to guarantee or secure the operating deficit of any such hospital.
8. House Bill 212 harmonizes portions of the Municipal Finance Act of 1921 with provisions of the constitution of North Carolina. Purpose is to make the hospital bond election and supporting tax levy effective by an affirmative vote of a majority of the votes cast.
9. Senate Bill 119 extends the time for selling bonds authorized by counties and municipalities. This Act is of interest to hospital areas that have voted hospital bonds.
10. Senate Bill 42—Authorizes the Board of Trustees of the University of North Carolina to establish and operate a standard Dental School in conjunction with the Medical School at Chapel Hill.

RADIOACTIVE

Writing in the current issue of The Journal of the American Medical Association, Lieut. Comdr. Cronkite says that although in recent years occupational hazards which may produce radiation burns, ulcers, and cancer have been reduced, they have not been entirely eliminated.

Scientists need to establish a "normal" range of the count of cells in the blood to aid in diagnosis of chronic exposure to radiation, he believes.

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The Health Bulletin

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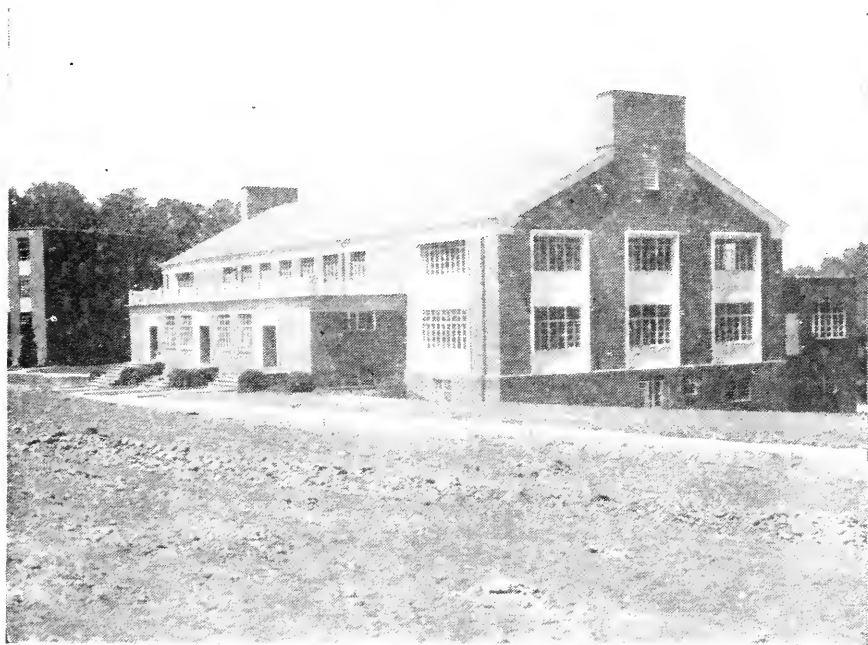
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Coyte Bridges Dining Hall, Mars Hill College

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
Chickenpox	Influenza	Tuberculosis
Diabetes	Malaria	Typhoid Fever
Diphtheria	Measles	Venereal Diseases
Don't Spit Placards	Padiculosis	Vitamins
Fly Placards	Pellagra	Typhoid Placards
Endemic Typhus	Residential Sewage	Water Supplies
Flies	Disposal Plants	Whooping Cough

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care.	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile Diarrhea.	Nine Months to One Year.
Breast Feeding.	One to Two Years.
Table of Heights and Weights.	Two to Six Years.
	Instructions for North Carolina Midwives.

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INSTITUTIONAL SANITATION

J. M. JARRETT
State Board of Health
Raleigh, N. C.

In the general sanitation program of the State and local Health Departments, considerable attention has been given in recent years to the sanitation of institutions. Included in this group are public and private hospitals, colleges, schools, sanitoriums, rest homes, and other such places.

It has been extremely encouraging to note the progress made in recent years by the officials of these institutions in providing proper and adequate sanitary facilities. Most progress has been made in connection with the food handling operations. New and modern kitchens have been provided with the necessary units of refrigeration and proper food storage, proper sterilization or sanitization of eating and drinking utensils, and in providing facilities for the serving of clean properly prepared meals. Consequently, we have been fortunate in having a minimum of sickness caused

from improper food handling practices, in our institutions.

One of the recently completed units, which is modern in every respect, and which could well be described as a model for other institutions to follow is described below in articles prepared by Mr. J. A. McLeod, Director of Publicity for Mars Hill College, Mars Hill, North Carolina, and W. A. Broadway, District Sanitarian, State Board of Health.

Mars Hill is a denominational Junior College located in Madison County in the Western part of the State. The officials of the college are certainly to be congratulated on the progressive step they have taken in protecting the health of their students not only through provision of facilities described below, but also by sponsoring and conducting food handlers' schools for employees of the institution.

Mars Hill College Dining Hall

by

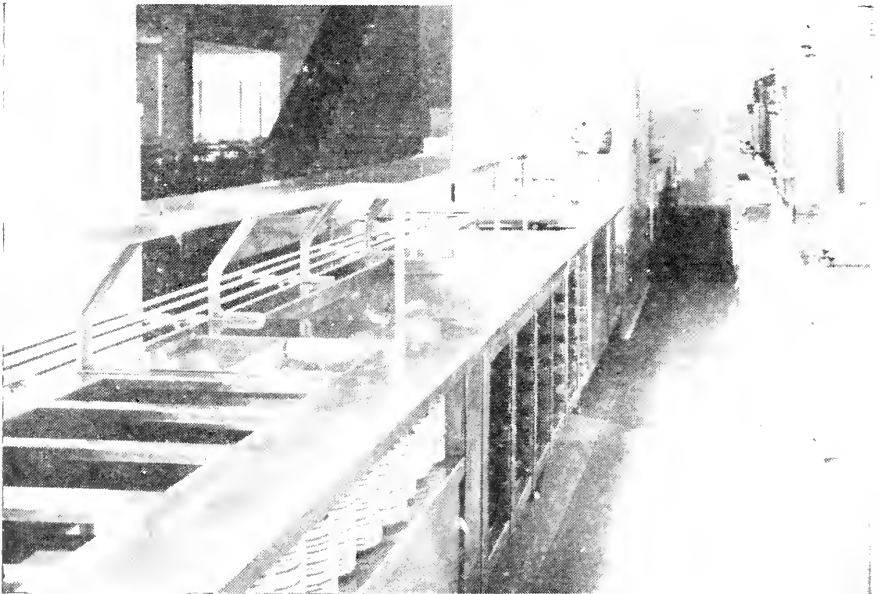
J. A. MCLEOD
Mars Hill College

The new Coyte Bridges Dining Hall at Mars Hill College, opened last Thanksgiving Day and dedicated on May 28, was designed and constructed to meet the highest sanitary standards for the preparation and serving of food. Dr. Hoyt Blackwell, President of the

college; B. H. Tilson, Superintendent of Buildings and Grounds; and the Architect, Henry Irven Gaines, of Asheville, worked closely with William A. Broadway, District Sanitarian of the North Carolina State Board of Health, in planning the building.



Dining Room, Mars Hill College



Serving Area from Behind Counter

With equipment the building cost a little more than \$300,000. The main dining room, with the mezzanine floor, will seat 1200 persons. The food serving and preparation facilities are designed for continuous service if needed. The service area of the cafeteria, which accommodates two lines, is floored with tile and has a high wainscoting of glazed tile. The specially designed serving counters are made of stainless steel and equipped with steam tables and refrigerated sections.

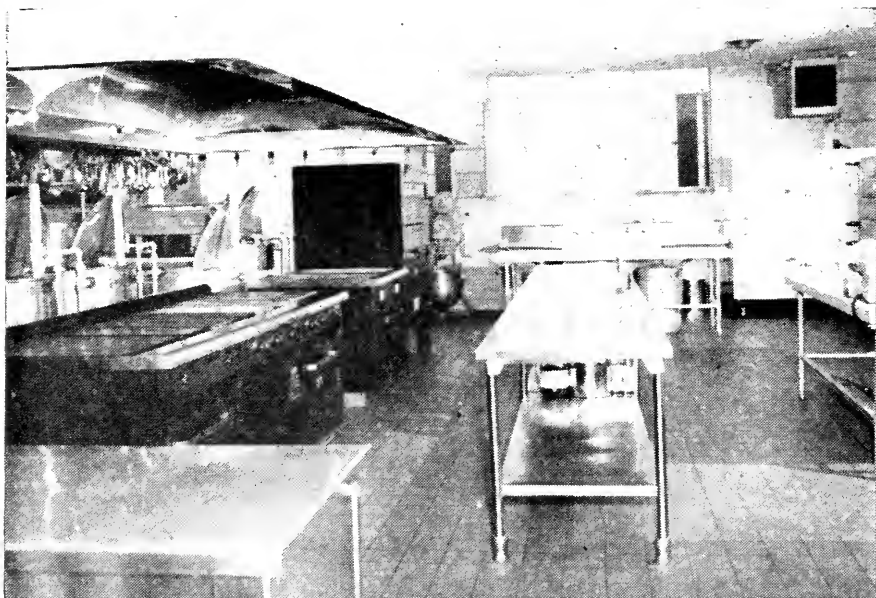
The kitchen occupies the second floor of a wing in the rear of the building and is designed for maximum lighting and ventilation. The tile floors and wainscoting make frequent cleaning easy. The stoves and other cooking equipment are placed in the center of the room, with ample space around them. All stoves and ovens are electric and thermostatically controlled; the kettles and urns are heated by steam. The areas for food preparation, pastry cooking, and salad making are each equipped with stainless steel sinks and tables, refrigerators, and laboratories.

The first floor beneath the kitchen, connected with the upper floor by a full-sized elevator, contains four refrigeration rooms and a deep-freeze room, a meat preparation room, and an office. The first floor also contains the dishwashing facilities, a vegetable preparation area, storage room, ice-making equipment, garbage disposal room, washrooms for employees, and the student center, which includes the book store, the post office, and a recreation room. This center is furnished with a fountain and facilities for a la carte luncheon service.

The dishwashing equipment is one of the sanitary features of the building. The dishes are brought to the dishwashing room by conveyors. They pass through the machines, which maintain a minimum temperature of 180 degrees Fahrenheit. If the temperature of the water drops below 180 degrees the machines cut off automatically. The dishes and glassware are returned directly to the serving area, where they are placed in cabinets beneath the serving counters with a minimum of handling. After



Kitchen



Kitchen



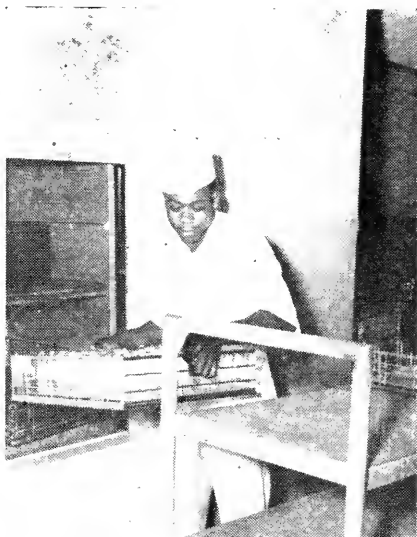
Meat Refrigeration

leaving the dishwashers the glasses are touched only by the one serving the beverages before being placed on the tray of the customer.

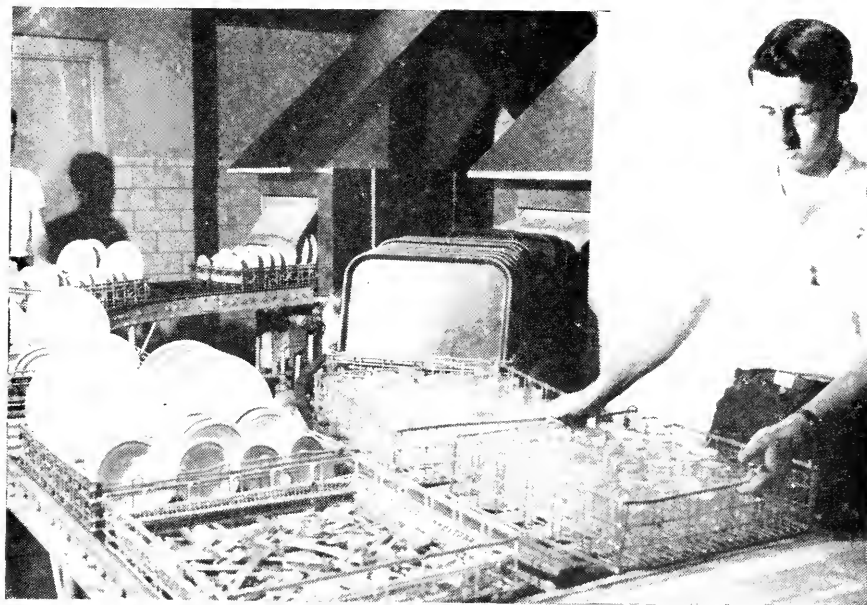
Another sanitary feature of the building is the location of washrooms and lavatories. The four tile washrooms for employees are fully equipped, including shower stalls. All food preparation areas are equipped with lavatories. Adjoining the lobby to the dining hall are spacious, sanitary washrooms for students and other patrons.

A foodhandlers' school was held at the college April 19-21, under the general direction of Mr. Broadway, State District Sanitarian, North Carolina State Board of Health; Dr. H. C. Whims, Health Officer; R. M. McDaniel, State District Sanitarian; Miss Jennie Stout, Supervisor of Health Education; Marley M. Melvin, Executive Vice President, North Carolina Restaurant Association; and members of the college staff assisted in the school, which was the first to be held for a school in North Carolina. Ninety-eight per cent of the regular employees in the dining

hall and a number of student helpers received foodhandlers' cards at the close of the school.



Handling Clean Glasses



Dish Washing and Glass Washing in Operation

MARS HILL 1949 MODEL COLLEGE CAFETERIA

by

WILLIAM A. BROADWAY JR.

District Sanitarian, 407 Oates Building,
Asheville, N. C.

Mars Hill College, located in Madison County, 19 miles due North of Asheville, was chartered by the General Assembly on February 16, 1859, thereby becoming the oldest education institution in continuous operation in Western North Carolina, and the first school in the state established by the Baptists west of the Blue Ridge Mountains. Located on a rolling, beautiful wooded track of 120 acres at the southern edge of the town of Mars Hill proper, this co-educational institution consists of twenty-nine buildings accommodating a student body of approximately 1000.

The most recent addition to the college and the pride and joy of both students and faculty, is the new Coyte Bridges Dining Hall. Like most institutions in previous years, the college possessed inadequate and obsolete food-handling facilities. President Hoyt Blackwell, Superintendent of Buildings and Grounds B. H. Tilson, and other officials of the college were well aware of this major deficiency. As rapidly as possible after World War No. 2 these mountain Baptists got busy in order to realize their dreams. President Blackwell scoured the highways and byways in his efforts to secure the necessary funds; Sprerintendent Tilson visited numerous other institutional kitchens including the majority of those in North Carolina, conferred with architects, representatives of the North Carolina State Board of Health, various equipment companies and manufacturers, endeavoring to plan the last minute detail on paper before actual construction was initiated. Both men fully realized the value of good construction, modern equipment, proper location and installation, and the fact that a line could be relocated on a blueprint much more easily than could a permanent wall one constructed. Architect Henry I. Gaines of Asheville, and

Mr. Tilson, after many weeks of burning the midnight oil, finally had the new cafeteria ready to lay the foundation stone. Accordingly, in the summer of 1947 actual construction began. Approximately enough students and faculty ate their first meal in the completed cafeteria on Thanksgiving Day of 1948, and the building was formally dedicated on May 28 of this year.

Since it's opening hundreds of visitors, including institutional heads, have been greatly impressed with it's modern, conveniently arranged equipment, terrazoed floors, tile walls, and the foresight of the men who conceived it. The building which started as a dream now represents a sound institutional investment of over \$300,000.

The main dining room with the mezzanine floor will seat comfortably over 1200 persons. Private dining rooms adjoining the main dining room have been provided for special parties and administrative units. Both construction and equipment, some of which was especially designed, were installed to meet the highest sanitary standards presently known for the preparation and service of food.

Food serving preparation facilities were designed and are adequate for continuous service, if needed. Two lines in service area of the cafeteria expedites service to students. Especially designed service counters made of stainless steel and equipped with properly covered steam tables and refrigerated sections are easily disassembled for routine cleaning purposes.

Many institution managers have envied Steward Martin's conveniently arranged incinerator ports. These receptacles, located behind the counter, in the kitchen, and throughout the service department, provide for the immediate incineration of paper and other waste

contributing to the general untidiness oftentimes so noticeable in the average establishment.

Complete Kitchen

The kitchen occupies a special wing in the rear of the building on the same floor level with the main dining room and is designed for maximum lighting and ventilation. Tile floors and wainscoting make frequent cleaning operations easy. Stoves and other cooking equipment are located in the center of the room with ample space around them. Numerous strategically located floor drains in this recessed area facilitate the cleaning of this equipment, together with live steam hoses designed for large equipment cleaning operations. All stoves and ovens employ electricity and are thermostatically controlled, while the kettles and urns are heated by steam. In this modern departmentalized kitchen food preparation, pastry cooking, salad making, etc., are each equipped with stainless steel complete sinks, stainless steel tables, refrigeration, and handwashing facilities. Sanitary Type angle jet drinking fountains are another feature installed in convenient places for the employees.

The kitchen being glassed in on three sides receives the full benefit of the cool mountain breeze. A huge stainless steel hood equipped with an exhaust fan covers the entire cooking area, removing excess heat as rapidly as it accumulates.

The ground level floor immediately beneath the kitchen, reached by a full-sized automatic elevator as well as tile stairways, contains four large refrigeration rooms, a deep freeze room, meat preparation room, the incinerator, the steam generating and ample hot water storage plant, and the manager's office. This floor also contains the dishwashing facilities, a vegetable preparation area, storage room ice-making equipment, a garbage disposal room equipped with washing and sterilizing devices, wash rooms for employees, and the student center. Ample storage facilities have been provided so that Mr. Wells, the purchasing agent, may buy in quantity and at a considerable saving to the in-

stitutions. The student center includes the book store, post office, and a recreation room. This center is furnished with a soda fountain and modern facilities for a separate a la carte luncheon service.

Notable among the carefully selected equipment, and one of its outstanding sanitary features, is the dishwashing setup. Soiled dishware is brought directly from the dining room to the dishwashing room by trayvorys, thus never entering the kitchen. Garbage is handled in the same manner, having a separate room and never coming in contact with the food preparation areas. Eating utensils are washed in especially designed machines which maintain a minimum temperature of 180° F. in their sterilization compartments, and if this sterilizing temperature should drop below 180 degrees, these machines cut themselves off automatically. Sanitized dishware and glassware are returned directly to the cafeteria serving area by enclosed trayvorys where they are placed in stainless steel cabinets beneath the serving counter with a minimum of handling. After leaving the machines glasses are handled only by the individual customer.

Another sanitary feature of the building is the location of washrooms and lavatories. The four tile wash rooms for employees are fully equipped including shower stalls and lockers. On each side of the building's entrance and adjoining the lobby of the main dining hall are fully equipped sanitary wash rooms for students and other patrons.

Employees' interest has noticeably improved and is reflected in increased efficiency, according to the management. Important chores formerly thought of as pure drudgery are now performed with alacrity and efficiency by some of the institution's most capable personnel.

Not content with having provided the most modern complete and sanitary equipment and building that money could buy, the college's officials further recognized the need for an educational training program in order to instruct employees in daily Grade A mainten-

ance and food handling methods. The State Board of Health was again called upon and a foodhandlers' school was held at the college April 19, 20, and 21, under the general direction of Mr. William A. Broadway, State District Sanitarian, Division of Sanitary Engineering. In addition to Mr. Broadway other public health personnel assisting in this school were Dr. H. C. Whims, Buncombe-Madison District Health Officer; Mr. R. M. McDaniel, State District Sanitarian, and Miss Jennie D. Stout, Supervisor of Health Education, of the Western District Office; Mr. Marley M. Melvin, Executive Vice-president of the North Carolina Restaurant Association, Raleigh; and members of the college staff including Mr. Tilson and Dean Lee. This school, incidently, had the distinction of being the first of its kind to be held for this type institution in North Carolina. 98% of the regular employees in the dining hall and a number of student helpers received foodhandlers' certificates at the close of the school. 100% of the employees attended the classes which pertained to their particular departments. A considerable number

of Madison County restaurant workers also attended this school including the managers of all the public school lunchrooms in the county. A similar type training program is presently being planned by the institution on an annual basis.

An Alumnus of yesteryear recently stood in front of the main administration building looking down over the new Bridges Memorial Dining Hall. Significantly enough he remarked,

"My pride and respect for the college has been heightened after inspecting that magnificent new building. Values such as better student morale, the assurance on the part of parents that their children have the protection of a clean modern sanitary foodhandling establishment, and the increased attention made possible in this building to better nutritional practices, are far more important to me than mere palatability of food. Institutions, like men, either grow and progress gradually, or else they rot and decay. There is no such thing in life as an absolute standstill. My congratulations to the students, faculty, and friends of Mars Hill College".

FIRST EXPERIENCES IN THE FIELD PROGRAM of the DIVISION OF VITAL STATISTICS

by

MRS. RUTH MEBANE, FIELD SUPERVISOR
Division of Vital Statistics

Field work is the newest venture in the Division of Vital Statistics. Some work was done along this line in the spring of 1948, but it was not until October, 1948 that it was made a full-time job. The worker does not spend her entire time in the field, not because there is nothing to do, but because registrar appointments, planning

of educational activities, and other duties require a good bit of office work.

A summary of activities in the field over this time, spring, of 1948 and from October, 1948, through April, 1949, shows 55 counties were visited.

COUNTIES VISITED
(30 counties had two or more visits)

Alamance	(2)	Chowan	(2)	Halifax	(2)	Perquimans	
Alexander		Cleveland		Haywood		Person	
Alleghany		Columbus		Iredell	(2)	Pitt	(4)
Ashe		Cumberland		Jackson		Randolph	
Bertie		Davidson	(2)	Johnston		Robeson	
Bladen		Davie	(2)	Lee		Rutherford	(3)
Buncombe	(3)	Duplin		McDowell	(3)	Sampson	
Burke		Durham	(5)	Mecklenburg		Surry	
Cabarrus		Edgecombe	(2)	Moore		Swain	
Caldwell		Forsyth		New Hanover		Wake	
Camden		Franklin	(2)	Northampton		Wayne	(5)
Catawba	(3)	Gaston	(2)	Orange		Wilkes	
Chatham		Granville	(2)	Pasquotank	(2)	Wilson	
Cherokee		Greene		Pender			

Types of Visits

Register of Deeds	49
Health Departments	43
Local registrars	84
Undertaker	36
Physicians	26
Hospitals	39
Individual families (Approx.)	60
Midwife meetings	11
Local registrars meetings	2

The procedure for field work in the county differs with the individual county problem. As a matter of routine, however, in the greater percentage of counties, a visit is made to the register of deeds or the county manager. Registration is discussed, copies of certificates furnished the county examined, "delayed birth certificates" gone over, methods of search for first certificate gone over, etc. If local registrars are making poor or incomplete reports this matter is noted and the worker sees the registrar before leaving the county. Since he, the register of deeds, is clerk to the Chairman of the Board of county commissioners to whom we look for township registrar appointments, the worker is able to get appointments for those townships without registrars on these visits. The register of deeds is most helpful in giving pointers regarding certain districts, directions to homes of registrars, and so forth. They are interested in getting better registration for their particular county.

The health departments in 43 counties were visited. In the consolidated counties registration was studied and

suggestions offered to improve promptness in reports, that is, promptness in registration or receipt of certificates from hospitals, doctors, and undertakers. The quarterly report showing lateness and completeness of reports from the consolidated counties is an impetus for better registration. Already several counties, which were at the very bottom, are pushing up and taking the place of those who were much better than they but were resting on their laurels. In the non-consolidated health departments the field worker checked with the clerks to see whether or not the individual registrars were making their monthly reports to them on time, and if they were not getting them, the registrar was contacted and straightened out. The newly consolidated counties, New Hanover, Halifax, Lee, Rutherford, and Pitt, were visited several times and assistance given in getting registration off to a good start in the health departments.

The summary shows a visit to 84 local registrars. From the field worker's standpoint these contacts with the individual registrars are the most important part of field work. The registrars, collectors of the birth and death certificates, are not all in towns or cities, behind well equipped office desks with a business course to their credit. Instead they are scattered all over the coves, farms and fishing villages of North Carolina. In many instances there is no paved road to their door. A visit from someone in the Raleigh office makes for more friendly relations be-

tween the registrar and the home office. They are glad of an opportunity to discuss their problems and the person from the Raleigh office gets an insight into the problems of registration on the home front that would never occur to the clerk behind her desk in the state office. Most of them are interested in the handling of certificates after they reach the state office and are always amazed at the yearly total receipts. The field worker carries a sample bound volume of certificates, a strip of microfilm, a few photostat copies and various tables and they are always interesting.

A goodly number of these registrars are women, homemakers, busy with their work in the church and community, Home Demonstration Clubs, etc. They are generally pretty well known in their community and make an earnest effort to get births and deaths reported. They go in their cars and afoot over their district. They are always glad to go with the field worker to get specific certificates corrected or filed. Sometimes the family of three or four may have to go too, but it is all in a day's work. A few days trip in the mountains of North Carolina, in the isolated districts, off the "tourist routes" is an experience not to be forgotten. In McDowell County the field worker makes a trip to visit a registrar on a dirt cove road just wide enough for Phoebe (the Ford) to travel. It was a road to a "transient" logging mill. The question paramount in the driver's mind was what to do should another vehicle suddenly appear around one of the continuous curves, for the mountain went up straight on one side and there was a formidable mountain stream on the other with the giant size rocks peculiar to mountain streams. Sure enough around a curve came an old light truck with steam pouring out of the radiator. The driver stopped, jumped out of the truck, came over and looked over the situation, reassured the field worker, then ran his truck up the side of the mountain leaving the rear sticking out in the road, then he engineered the passing of "Phoebe" around the truck. He told the field worker that there would be no more "passin" on

that road but that he would be back in two hours and to wait for him. This, the field worker did gladly, but even so the trip back was a little disturbing, dark was coming fast, and the road was anything but velvet. In Ashe and Alleghany the cove roads wind in and out and up and down and a good many visits to families whose children's birth certificates were being sought had to be made on foot. In the Socco Gap Section, Franklin, Tipton, Graham, and Cherokee, as well as many other places, visits to the small settlements in the hills is interesting though precarious. Try as one will, dark will invariably catch you, but to drive along those mountain roads and catch glimpses of the lights of the little cabins in the hills is a sight to be remembered, particularly when you think that in those cabins deaths and births will occur and that those important events will be registered with the State office. Perhaps the certificates will come in altogether correct and if so, no special attention is given to them, but if incorrect or poorly made out, the clerks may fret not knowing under what conditions these same certificates were procured. In Eastern Carolina in the isolated or sparsely settled areas one has the sand or rutted road and the distances. Some times in order to insure getting through one has to stop and let the air out of the tires. Here, though as in the mountains, the neighbors or the small store, or the postoffice will give you directions and get you on your way. Last fall in the late afternoon the field worker stopped at a country store for gas and a "coke" and to get directions. She had been at the store early in the day and found them most accommodating. The impression must have been fair, for a father and young son were most helpful in giving minute directions as to how to get to my particular spot. However, while the coke was being enjoyed, the son asked if the field worker liked the county, liked going around "doin this sort of thing". Perhaps the answer was not entirely too reassuring for the day was almost spent, and it had been hot, the worker not altogether adjusted to the new

order of things, for the son immediately said that his father lived alone on that big farm (pointing) and he wanted a wife, that he would be good to her, she would not have to work, that he had all the conveniences, even oil heat. He, the son, knew he would be good to her, because he was good to his mother. Father nodded very approvingly and put in a few words. But the worker saw the large dairy herd and saw the oceans of milk and such and not liking cow products on the hoof said she "would think about it." Whether farm work would be harder than the drives in the sun, rain and wind, the intense heat, over good and poor roads was something that could not be threshed out all in a minute. In a western county the worker attended church and Sunday School one Sunday morning and after services ate a picnic dinner with the members and got in a little talk about the work. It was a beautiful day, a beautiful spot in the heart of the mountains, people had come in all sorts of conveyances, earnest, kind, sincere folk. The minister was most anxious that the worker decide to settle in his community. So, though long past the bloom of youth the field worker may still have a chance to change occupations for better or for worse.

There were 36 visits to undertakers, some of which were just in routine, others for specific violations. It is a practice of the field worker to call on as many undertakers as possible and discuss the necessity of the burial permit when in a community. The undertakers are quick to give reasons for the non-compliance with the burial law and they have a good deal on their side. The chief complaint is that they lose so much time finding the doctor, perhaps having to sit in a doctor's office for an hour or more just to get certificates signed, or the doctor takes the certificates and tells him to come back or that he will see that it is mailed and then straightway forgets it. So the undertaker goes ahead and buries the deceased without a permit. Later the Raleigh office may get a complaint from the registrar and write him about the

matter. He, remembering all the trouble he had gone to trying to get the certificate before burial, is somewhat touchy about the matter. However, with two exceptions, the undertakers visited seemed to want to cooperate.

There were 26 physicians visited for specific reasons, either to collect death certificates they had not filled in and returned to the undertakers, or births they had not registered. In some of the newly consolidated counties physicians were visited as a matter of routine. Even though very busy, with a few exceptions, the doctors seemed glad to cooperate and apologized for not having filed the certificates. Of course a few of them placed the blame on the State office, stating that they had filed the certificates one or more times. When sifted down, they might remember that they had given the certificate to the father of the child to send in instead of sending it himself to the local registrar. One visit to a doctor's office will long be remembered for it took the worker back to the days of her childhood in the country when she was "carried to the doctor." This office was apart from the house in the rural mountain section of our state, the doctor has long been giving of his time and strength to the mountain folk, serving them as doctor, guide and priest. The office was cluttered with all the various things that were in the average doctor's office some forty years ago. There was the old roll top desk groaning under its load of letters, samples, advertisements of everything from road machinery up to the latest developments in medicine, samples, and empty bottles. In one corner of the room were the saddle bags and lantern hanging overhead ready for the emergency when the roads were not safe for the tired old car in the barn. The examination table, looking its years, was cluttered up with fascinating bottles of all sorts. On a table nearby was a pair of old apothecary scales, a mortar and pestle. Even a half full bottle of larkspur lotion was close at hand. The worker caught the doctor on the fly. He had just come from "catching a baby" as he had put it and was going to

another. In fact the worker while waiting for the doctor had been engaged in conversation with the young father and knew his anxiety. The doctor took time to sign certificates and to talk about registration and promised to try to find time to file certificates promptly. On his way off with the young man and field worker, the young man tried to explain his lack of funds for the event and the doctor came back with "Well, son, I guess I can wait, am still waiting for your old man to pay me for getting you here." This particular doctor had not reported approximately 40 births and his only excuse was he just didn't have time. A goodly number of these birth certificates have since come in.

Thirty-nine hospitals have been visited and while the Administrator or Superintendent and record clerks are busy they are very glad to give an interview. To some an analysis of their methods of keeping records and filing certificates was an eye-opener to the administrator or superintendent and they were glad of suggestions to improve their methods. They, like the undertakers, complained of the laxness and tardiness of the physicians in signing certificates. Record clerks stated that certificates would be completely filled in except for the doctor's signature and would lie on the desk for days before the doctor would take time to sign. One suggestion which the field worker has made and which is being tried is that the complete certificate be attached to the chart board of the mother, so when the doctor is making his rounds, giving directions, etc., that the certificate will be there on the chart and he can easily sign it. The obstetrical nurse then can send it down to the record clerk completed. A few hospitals are doing this and find it satisfactory. Some hospitals which had been sending certificates to the doctors' offices to be signed and routed are now holding them for doctors' signatures and sending them to the registrar themselves. Handling of death certificates in the hospitals is still a weak link in our chain of registration, but hospitals are seeing the need of a sub registrar, some one who can issue

a removal permit and secure the certificate from the undertaker any hour of day or night before releasing the body to him and this will, no doubt, be worked out satisfactorily in the months to come.

There have been approximately 60 visits to individual families regarding birth or death certificates. The parent usually becomes interested in birth certificates often with the result that they want to know if all the children's births have been properly reported, particularly those for whom they have not received the photostatic copies.

Eleven midwife meetings have been held to which the field worker was invited to attend and to talk over registration of births. These meetings are most helpful to the midwife and one has to look far to find a group of people anywhere who are more serious about their work. The meeting is usually a full day's work for the midwife. They listen attentively to the field worker and on open discussion have all sorts of questions, for there are always new problems regarding a particular registration. The midwives seem very pleased to have a "Raleigh lady" come to their meeting, and send her off with a bouquet of flowers or a little gift of their appreciation and the sincere request that she come again. Having just recently attended a class of midwives on a return invitation the worker wondered what, if anything would the midwife get from this second visit. However, the worker was surprised to find that they got much more out of the second visit than the first. They themselves had more questions to ask and were much more interested. They are interested, too, just as the registrar in the final disposition of the certificates they file. Many of them did not have the remotest idea of why they filed certificates or what became of them. To get better certificates from the midwife she should know why she files a certificate and what it is used for and what finally becomes of it.

So far only two local registrar's meetings have been held, one in Bladen, arranged by the Register of Deeds of

that County, to which were invited undertakers, doctors, and midwives, as well as registrars. It was a good meeting, and every effort was made by the Register of Deeds to make it a success. He was host to delightful refreshments at the close of the meeting. The other meeting was in Davidson County, called at the request of the Division and it was well attended. These meetings are invaluable. It is an opportunity to discuss with the registrars individually and as a group, registration of birth and deaths. It forms a link with the home office and the registrar feels that he is really an important part of the chain. In going over the state one hears on every hand that the registrar knows nothing of the state office, no one from the state office has ever visited them. It is obliged, so it seems to the field

worker, to make for better registration. No one can do a good job until they know something of that job and the value of it. Simply collecting certificates and making all the various reports the registrar is called upon to make, and not knowing why, will never make for good registration. When the hospital, doctor, undertaker, midwife, and local registrars see the need of it, they will become interested and registration in North Carolina will strike a new high level.

A worker could go in to many sections of western and eastern North Carolina and stay two to three months on a stretch and find plenty to do. However, the worker usually runs out of expense money and has to get back to base.

PREVENTIVE MEDICINE

WILLIAM H. RICHARDSON

State Board of Health
Raleigh, N. C.

At the conjoint session of the North Carolina State Board of Health and the State Medical Society, at Pinehurst in May, Dr. J. W. R. Norton, in his annual report, declared that public health is dedicated to the practice of preventive medicine and that it has enough work in this field to keep it busy, without any infringement upon private practitioners of medicine working in the curative field.

With this statement of Dr. Norton's in mind, let us consider **what is** preventive medicine. In its broadest sense, it is mass protection against those diseases known to be preventable or controllable. While key positions in public health are held by medical doctors, there are many angles associated with this work which do not involve what is commonly conceived to be the actual practice of medicine. When a person becomes ill with typhoid fever, he naturally sends for his private physician. The physician, in turn, treats his patient and

aids in his recovery, as best he can. On the other hand, the public health worker practices preventive medicine to keep any of the population from **contracting** typhoid fever. This task may be performed by a sanitary engineer who is **not** a medical doctor, but who **does** practice **preventive** medicine, in the broad sense of that term. Thus, we see the two working together; that is, the private practitioner of medicine, in the curative field, and the public health worker, in the field of preventive medicine.

How many of **you** have ever seen a patient suffering with typhoid fever? The chances are that none of you ever saw such a person—if you are a **young** man or a **young** woman. On the other hand, there may be many readers who have passed middle life. In that event, you may have had typhoid fever **yourself**. If you have not and are an elderly person, you have known many to die with this disease, of which there were only

57 cases among North Carolina's more than 3½ million persons last year. Of this number, **only six died!**

Many of you remember the fall of 1918, the last year of World War I. During the fall and winter of that year, literally thousands of persons both in the armed services and in private life, died of influenza and pneumonia. During the War Between the States and during the War With Spain, thousands died as a result of typhoid fever. It has been said, especially in connection with the War With Spain, that we lost more men from typhoid fever than from Spanish bullets.

Then followed the discovery of control methods, two in number—immunization and sanitation. We will not undertake to go into this subject in a detailed manner, but we all know that typhoid fever has been reduced almost to the vanishing point, but any relaxation of our efforts would mean a comeback for this terrible disease. What we have said of typhoid fever is true of malaria, the cause of which is a very definite insect known as the anopheles mosquito. Consequently, the way to control malaria is to prevent the breeding of this insect. This has been done. In former years, before control methods were discovered, thousands of people contracted malaria in North Carolina every year, and hundreds died of this disease. Last year, there were only 147 cases of malaria reported in North Carolina and **not one single death**, according to reports filed with the State Board of Health's Bureau of Vital Statistics. Compared with years gone by, this contrast is little short of **amazing!**

Now let us get back, for a moment, to Dr. Norton's statement concerning the line of demarkation between curative and preventive medicine. While our doctors have continued to treat diseases that are known to be preventable, it is not the doctor's place, nor has he the time, if he would, to drain swamp lands so that mosquitoes will not breed. Neither is it the doctor's place to erect sanitary privies or otherwise insure community cleanliness. The private practitioner's job is to diagnose and

treat diseases. And so, you see, there is not—certainly in the matter of mass protection—any conflict whatever between public health and organized medicine. There are certain things that both the private practitioner of curative medicine and the preventive medicine practitioner do in common. For example, each may administer immunizing doses of anti-typhoid vaccine. The private practitioner does not have the time to practice **mass protection**.

Another disease that is controlled through preventive medicine is diphtheria, most of the victims of which are **little children**, hundreds of whom formerly died of this disease, as compared with the handful who now succumb.

Last year, there were, in North Carolina, 485 cases of diphtheria, among young children. The death toll was just 26 more than should have been allowed to die, and the 485 who had the disease were just that many who should not have contacted it at all. Diphtheria definitely is preventable, and for ten years now there has been a law on the statute books of our State requiring immunization against this disease before a baby reaches its first birthday. Under this law no child is allowed to attend any public, private or church school who has not been vaccinated against diphtheria, as well as smallpox.

Speaking of smallpox, it is safe to say that few readers ever saw a person with this disease. There were only **three** such persons in North Carolina last year—less than one for every 1,000,000 inhabitants, in contrast with former years, when thousands contacted the disease every year, and hundreds died of it. There have not been over three deaths from smallpox in North Carolina in the past 10 or 12 years, but if we should relax our effort and lapse into an unvaccinated population, smallpox would return. There was a time when this disease was so prevalent that practically every county in the State had to go to the expense of maintaining an isolation hospital for smallpox victims, but these were not dignified with the name of hospital. They were called pest houses.

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The Health Bulletin

Published by THE NORTH CAROLINA STATE BOARD OF HEALTH

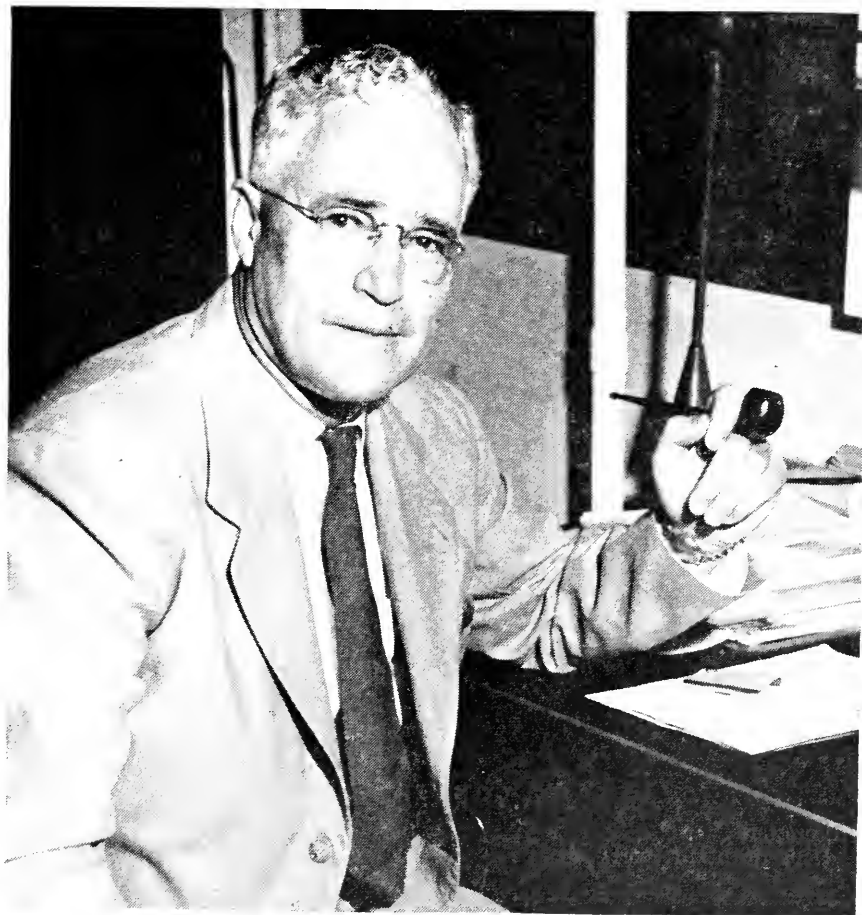
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Vol. 64

JUNE-JULY, 1949

No. 6 & 7



J. W. R. NORTON, M. D., STATE HEALTH OFFICER

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
Chickenpox	Influenza	Tuberculosis
Diabetes	Malaria	Typhoid Fever
Diphtheria	Measles	Venereal Diseases
Don't Spit Placards	Padiculosis	Vitamins
Fly Placards	Pellagra	Typhoid Placards
Endemic Typhus	Residential Sewage	Water Supplies
Flies	Disposal Plants	Whooping Cough

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care.	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile Diarrhea.	Nine Months to One Year.
Breast Feeding.	One to Two Years.
Table of Heights and Weights.	Two to Six Years.
	Instructions for North Carolina Midwives.

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J. W. R. NORTON, M.D., M.P.H., State Health Officer

JOHN H. HAMILTON, M.D., Acting Editor

FOREWORD

By J. W. R. NORTON, M.D.

State Health Officer, Raleigh, North Carolina

THE period covered in reports following this foreword—that is, the calendar year of 1948—was not without its discouraging features, even though, as a whole, progress was noted. In mid-year of 1948, North Carolina was visited by the most widespread epidemic of poliomyelitis in its history, and one of the worst ever recorded in the United States. During this epidemic, there were 2,517 cases reported to the State Board of Health and 147 deaths. This situation naturally delayed or otherwise interfered with other Public Health services. However, the crisis was handled as well as could have been expected, with a minimum of confusion and misdirected effort.

Personnel shortage continued to prove a deterring factor, with Public Health unable to obtain adequate professional help at the salaries allowed for such work. The gratitude of the State Health Department is expressed to those who remained at their posts, in the face of sometimes flattering offers to enter other fields of service. This spirit demonstrated their devotion to duty and those who remained are to be commended.

Throughout the year, the future was considered in the light of a keen desire on the part of those charged with the administration of Public Health in North Carolina to secure such financial assistance to improve the work in the

various local health units. Budgetary requests for the biennium beginning July 1, 1949, were drawn up with this objective in view, and in the next conjoint report to the State Medical Society, the Board of Health will be able to report officially that \$1,600,000 in new money was made available for improving the work in local health units, for the biennium above referred to, as well as \$600,000 for a new building for the State Board of Health in Raleigh, designed to meet present and future needs. We will also be able to report that every one of North Carolina's 100 counties was organized for full time Public Health Services, as of July 1, this year, as well as the establishment of a well-planned Field Training Program for public health workers.

This foreword, written for customary publication in The Health Bulletin, is designed to focus attention upon the reports from the various Divisions comprising the State Health Department, submitted to the conjoint session in Pinehurst, in May. These reports are given every summer to the readers of The Bulletin.

It might be well, however, to point out some of the things not covered in these Divisional reports, including some of the activities of the Division of Central Administration, of which the Secretary and State Health Officer is the Director, and directly under whose

supervision certain important services are performed. Among the other members of this Division is the budget officer, whose work is indispensable in the conduct of the Department's financial and fiscal affairs. This official has charge of placing of orders for the various Divisions, as well as payroll duties. With the intricacies of the present day, such as payroll deductions, etc., the budget officer's work was greatly increased.

The Personnel Officer also works in the Central Administration. This work has expanded during recent times and includes the keeping of accurate records on each employe—state and local, assistance in recruitment, promotions, etc.

Also included in the Central Administration is the work of the Senior Publicity Specialist, who writes the Department's news items and conducts a weekly radio broadcast over Station WPTF, known as "Your Health and You." Although this official is a layman, he works under medical supervision and confines his activities to describing the services made available by the State Health Department including immunization programs, etc. Each year he reports the proceedings of the State Medical Society, through the papers and press services.

Included in the work of the Central Administration is the filing system for correspondence and other official papers of the entire Health Department. Frequent reference must be made to previous correspondence and reports. This work alone keeps two persons employed full time.

The purpose of making the State Board of Health's reports public, through annual publication in *The Health Bulletin*, is to acquaint readers with just what their Health Department is doing for them, in affording mass protection and performing the various other functions for which the Department was established and is being maintained. There are around 60,000 names on *The Bulletin's* mailing list. It is assumed that each copy is read by more persons than the one whose name appears on the label. In some

instances, large families read single copies of this publication, which the State Board of Health has been issuing since April, 1886. It is published monthly, and is sent free to all citizens requesting it. Please report any change of address so that no copies will be missed.

More and more, emphasis is being placed on improving the work of the local health units. It is necessary to have a central unit, through which legislative appropriations are channeled, as well as Federal moneys made available for Public Health work, and certain work must be performed centrally such as vital statistics and laboratory services but it must always be kept in mind that where the work actually is done is out where the people are and not around desks or in conference rooms in Raleigh. While planning is necessary, and while it is necessary to employ division heads, clerks and others, the individuals who to receive public health services are to be kept uppermost in our minds.

As in the matter of vital statistics, for example—and epidemiology—it is necessary to maintain a clearing house at Raleigh, to which reports of births and deaths and the incidence of certain diseases are made. Here they are compiled and put to such uses as are necessary. Statistics are important, but when simply taken as so many figures, they lose their real importance, which is to teach lessons. For example, reports are made each month of the incidence and deaths from preventable diseases. This information is necessary, if we are to wage a successful fight against such diseases. In this connection, it might be said that the 1949 Legislature took an important step when it made cancer a reportable disease. We must know where cancer exists before we can wage a successful fight on it. The forward step above referred to was designed to aid in the prosecution of the Board of Health's cancer case-finding program now in progress and about which much already has appeared in the press and been heard over the radio. And so, statistics do have a very definite

place in any preventive or correctional program — when properly interpreted and put to use. Without them, we would not be able to make many of the valuable calculations necessary to any program of progress.

During the period covered by the reports to follow, an intensive effort was made to bring a closer relationship between the State Health Department in Raleigh and the local health units, through a series of conferences, in which views were exchanged and suggestions made. This movement for closing any gaps of misunderstanding between local and State health officials, plus an intensive program for improving local health facilities, already has borne fruit. This was conspicuously evident during the last session of the General Assembly, when a large majority of our local health officers were so zealous in behalf of the needs of their people, from a Public Health standpoint, that they led in stimulating public health interest among their public spirited citizens who inspired their legislators to do the same thing. The net result was that there was a growing consciousness on the part of our representatives in the General Assembly, that the people not only were becoming more health conscious, but had begun to put Public Health in its proper relationship to other progressive movements.

Cooperation is necessary to the prosecution of any worthwhile program, but, to be cooperative, the group appealed to or in whose behalf the program is being carried out, must be informed. Otherwise, they could not reasonably

be expected to respond. That is why, for example, the State Board of Health's tuberculosis case-finding program, in which much progress was made during the period of these reports, has been publicized in all sections of the State. The objective of this movement is to secure a chest x-ray picture of every person in North Carolina over 14 years of age. If this is to be accomplished, the public must be informed of the advantages of such procedure. The people must be made to understand that if we are to successfully fight tuberculosis, we must find those in whom the disease exists, in order that they may, if the disease is detected early enough, be treated and cured, or, if they are a menace to others, they must be separated from those they are likely to infect through continued contact. References to this and other Public Health programs, concerning which full accounts are given in the reports this foreword is intended to introduce, are not made for the purpose of repetition, but for the sake of emphasis.

In looking over the record of our State Health Department, not only for last year, but for the years that have come and gone since its establishment, we find many things to inspire justifiable pride. We have, in the main, made progress; we have also missed many opportunities, perhaps. But whatever may have been the experience of the past, we undoubtedly, are entering into a period that will be filled with greater responsibilities, which we would be prepared to meet, if we are to achieve the objectives for which the Board of Health was created.

DEPARTMENTAL REPORTS

North Carolina State Board of Health

(January 1, 1948—December 31, 1948)

DIVISION OF PREVENTIVE MEDICINE—G. M. Cooper, M. D., Director

The responsibilities of the Division of Preventive Medicine include the Mater-

nal and Child Health Service, the Crippled Childrens' Service, the Mailing Room, the Multilith Department, and the individual medical informational correspondence service. One of

the important functions of the Board during the last few years has been the distribution of biologicals to the various local health departments who requested this aid. This service means that by the utilization of funds allotted by the U. S. Childrens' Bureau for the operation of these departments, biologicals free of charge may be provided for the immunization against diphtheria and whooping cough especially. This service has been of material benefit to local health departments in enabling them to provide free immunizations to every class of people. With a hundred counties having whole time health department arrangements, the four final provisions in as many counties to become effective July 1 this year, there will be no legitimate reason why any child should fail to be immunized against these diseases, as well as smallpox and typhoid fever and other crippling diseases, if the parents are willing to put themselves to some trouble to obtain such protection.

The work was carried on during 1948 with no aid from physicians until August 16, 1948, Dr. Robert J. Murphy, a qualified pediatrician, became permanently associated as a pediatric consultant with the department. Dr. Murphy's assistance has been very valuable in setting up a program for the care of prematurely born babies. During the last two or three years about one-third of the babies dying under one year of age constituting the infant death rate of the State has been on account of the babies being prematurely born and no provision made for the special care necessary if such babies are to survive. Special arrangements have been made with an initial group of hospitals, some of which have been required to expend a considerable sum of money to meet the minimum standards necessary to satisfactorily carry on this work through and with the cooperation of local health departments all over the State, with practicing physicians and with the pediatricians of the State. It is expected within a year or two that this service will be

one of the most important activities of the State Board of Health.

Negotiations at this writing are underway in an effort to obtain the services of a qualified obstetrician and another pediatrician, the latter to aid in the work of the Crippled Childrens' Department, which has been very heavy in its demands on the director's time for the last year or two. Just as soon as a pediatric consultant can be secured, arrangements will be immediately put into effect to establish a program for the care of rheumatic fever patients which is sorely needed throughout the State at present. This crippling condition is responsible for much suffering and a great many deaths, and there is up to this time no effective provision available for their care. Many of these patients are without means which would enable them to secure the expensive care by specialists in properly equipped hospitals.

The EMIC program is being gradually liquidated. It will be recalled that more than 40,000 mothers and babies had medical and hospital care provided free of cost. By Act of Congress this service was ended June 30, 1947, but with a provision that the wife of any eligible serviceman who was pregnant at that time would receive aid and after the birth of such baby, the baby would receive free hospital and medical care when necessary for the first year of its life. Therefore, something of a final report is herewith set forth covering the activities of 1948.

Maternity cases completed.....	1,053
Attended at delivery by	
doctors of medicine.....	917
Attended at delivery by	
interns and midwives	5
Cases completed before delivery..	131
Delivered in hospitals.....	877
Delivered in homes.....	45
Infant cases completed.....	379

Cost:

Maternity cases	\$ 94,935.97
Infant cases	29,524.44

Total cost\$124,460.41

The work of the Maternal and Child

Health Service which contemplates providing prenatal care, postpartum examinations and advice to mothers in prenatal and well baby clinics for all women who are expectant mothers or who have young babies who do not have the services of a private physician, the clinics to provide medical examinations on a monthly basis followed by the advice of the doctors and the nurses under the general management of the local health departments throughout the State, have been successfully carried on in 1948. During the year, 2273 M&I clinics were held in 64 counties and four cities. The patients were attended by 217 different physicians. Broken down into actual figures, the attendance of patients on these clinics were as follows:

	White	Colored	Indian	Total
Prenatal ----	785	7876	47	8708
Postpartum _	459	3062	5	3526
Infants ----	2121	7280	12	9431
Preschool _	2868	4472	4	7344

In these clinics 54,613 booklets and pamphlets relating to care of mothers and children were distributed to the individual patients attending the clinics.

In the mailing room of this Division in which literature for all of the State Board of Health is sent out, the following items relating to work of this department were sent out:

Health Education -----	2,059,829
Prenatal Literature -----	23,199
Infant Literature -----	90,790
Miscellaneous Supplies ---	44,421
Miscellaneous Midwife Supplies -----	6,344

Close cooperation is maintained throughout the State with the cooperating hospitals and specialists utilizing available aids from such institutions. For example, the Negro Medical Social Workers provided for work in Duke Hospital among Negro maternity cases is continued in that work with satisfactory results. Funds for the operation of all such work and the field work connected with the clinic are provided by allocation of money from the U. S. Childrens' Bureau.

The Multilith Department is still effi-

ciently meeting the peculiar demands in printing, along with the mimeograph department of the mailing room, in order to satisfactorily care for the work of the various divisions of the State Board of Health.

Crippled Childrens' Department: The work of this department has been considerably expanded during the year. A larger number of children have availed themselves of the privilege of attending the clinics conducted by a qualified orthopedic surgeon. Clinic facilities on a monthly basis with qualified specialists in charge have been within reach of practically every family in the State, certainly within a maximum of fifty miles distance for most of them. The arrangements for clinics to which parents may bring their children and obtain a free examination with at least a tentative diagnosis and certainly with advice as to further procedures necessary have been established and increased in number gradually for the last thirteen years.

The clinics are maintained on a cooperative basis with the Vocational Department of the State Department of Education and in cooperation with the State Orthopedic Hospital at Gastonia. Most of the clinics are conducted on a monthly basis. An exception of this is the Gastonia clinic which is on a weekly basis, and the clinic in Asheville is conducted twice a month and during the year it became necessary to establish a third clinic for service to discharged polio patients on account of the polio epidemic occurring in the State during the year. These clinics are open to children under twenty-one years of age. This applies to the limitations of the State Board of Health in this field.

Under the term "tentative diagnosis", it is meant that an orthopedist in charge of a clinic may see a large number of crippled children and an occasional child is encountered in which a positive diagnosis cannot be established in the short time necessary to devote to each individual in the course of the day's clinic and also for lack of facilities such as X-ray and laboratory aids. Therefore, the department in such cases

authorizes care in a hospital for complete examinations by the orthopedist and the establishment of a positive diagnosis, followed by whatever treatment is necessary.

These clinics are primarily for the benefit of the poorer people of the State, families that are not able to pay the high prices necessary and long hospitalization requirements, to say nothing of the nominal medical care in such cases.

The patient is given the benefit of the doubt. Welfare departments are required to certify that these families are among the type who need this care and are unable to provide it without at least some aid. In the case of small farmers or wage earners, certainly in all of the tenant and sharecropper part of the population, expensive hospitalization and surgical treatment is out of the question without some aid from some quarter. Therefore, these funds have been of inestimable value in aiding large numbers of people every year since it was established. The following is a summary of the volume of work carried on during the year:

The clinics were open to any children under 21 years of age for a free orthopedic examination by the clinician in charge, 10,905 visits being made by children to clinics, the number of clinics being held was 257. Total number of children under hospital care during the year 1948 was 1,462—191 having remained over from 1947. 1,271 were admitted to hospitals during the year. There were 1,244 discharged from hospitals, leaving 218 remaining at the end of the year to be carried over into 1949. 92 children were given convalescent care and 12 boarding home care. 340 appliances which included such items as artificial legs and arms were purchased during the year 1948. There were 529 outstanding authorizations as of December 31, 1948, and 469 applications pending as of the same date. The number on the State register was 17,161. This is an unduplicated count and is greatly reduced from the previous year due to the fact that we have had more funds available for carrying on the work and there-

fore have been able to treat more patients.

DIVISION OF LOCAL HEALTH ADMINISTRATION—John H. Hamilton, M. D., Acting Director

Ninety-six of the one hundred counties in North Carolina, as of December 31, 1948 had developed some type of local health service. During 1948 local public health service in the ninety-six counties were provided by seventy-one local health departments of the following types: (1) forty-nine county health departments; (2) nineteen district health departments, and (3) five city health departments.

The serious shortage of qualified professional personnel available, particularly physicians and nurses, for public health work during 1948 remained a major problem. As of December 31, 1948 there were 943 full-time budgeted positions with 65 full-time vacancies. Of this number, 14 were full-time health officer vacancies, and 31 were public health nursing vacancies.

TRAINING PROVISIONS: During 1948 the following number of public health personnel received, or were in the process of receiving, special training under the program and policies of the State Board of Health:

Health Officers	8
Division Directors	2
Public Health Nurses (Scholarships)	34
Public Health Nurses (Orientation)	20
Public Health Nurses taking special courses in various fields of P. H. work	102
Hospital Nurses	4
Sanitary Engineers	1
Sanitarians	17
Public Health Educators	6
Public Health Investigators	1
Nutritionists	2
Bacteriologists	2

Technical consultation and advisory service to local health departments, joint planning with the other divisions of the State Board of Health and cooperative programs with other State agen-

cies and organizations were carried out, prior to July 1, 1948 under the direction of Dr. R. E. Fox, Director of Local Health Administration, and Assistant Director, Dr. William P. Richardson, and subsequent to July 1, 1948 under the supervision of Dr. John H. Hamilton, Acting Director.

In the Division of Local Health Administration one of the most important objectives during the latter part of 1948 was to provide for the establishment of health services within the last four unorganized counties of the State, namely, Madison, Brunswick, Jones and Pamlico. (NOTE: I am happy to report that three of the four counties having no organized health service as of December 31, 1948 began operation March 1, 1949. The fourth and last county voted to establish local health service effective July 1, 1949).

The nature and scope of outstanding activities achieved by the Division of Local Health Administration during 1948 are as follows:

PUBLIC HEALTH NURSING: In January 1948 there was a supervising public health nurse and three consulting public health nurses with three vacancies on the public health nursing staff. Mrs. Blanche Vincent was employed on September 27 as consulting public health nurse with tuberculosis nursing as her special field.

During the year, field visits were made to local health departments for consultation service to health officers and public health nursing staff. Two health departments added supervising public health nurses so that 17 of the 71 local health departments now have supervising nurses. In departments without a supervisor, the consultants have worked with the public health nurses in home visits, clinics and in schools. Considerable time was spent in recruitment of new personnel.

In order to help improve the public health nursing service throughout the State, the consultants have planned a continuous staff education program. Refresher courses in nutrition for public health nurses have continued to be a

joint project of the nutrition and nursing consultants. Seventeen nurses attended a two-weeks orientation course in tuberculosis nursing at McCain. Thirty-six nurses attended Venereal Disease Institutes at the Eastern Medical Center, Durham. During July and August, the School of Public Health at Chapel Hill offered a series of five-day courses in special fields—Cancer Control, Geriatrics, Mental Hygiene, Orthopedics and Tuberculosis. One hundred and two public health nurses from North Carolina were included in those registered for these courses.

HEALTH EDUCATION: During 1948, the major activity continued to be emphasis on strengthening local health education program development through recruitment, training, and employment of qualified local health educators. As of December 31, 1948 there were thirteen local health educators working on a full-time basis with county, district and city health departments serving a total of nineteen counties and three cities. In addition, two of the five health educators employed by the State Board of Health continued working in their dual capacities as local health educators and area health education supervisors. Two health educators were assigned to the Division of Tuberculosis Control to assist with community organization and health education aspects of the mass X-ray program, and another health educator continued working with the School Health Coordinating Service.

During 1948, principal activities of local health educators included such activities as: assisting public health personnel with a variety of programs as staff conferences, foodhandler classes, interpretation of available health department services, community study groups, conferences, and institutes on various health problems and others; assisting with community organization activities as development of neighborhood health committees, school health committees, community and countywide councils; assisting with preparation, production, and distribution of health education materials as posters, pamph-

lets, exhibits, reports, and fliers; assisting with arrangements for film showings, radio programs, and allied activities.

Six prospective health educators were recruited for one year of graduate study in public health and health education at the School of Public Health, University of North Carolina and North Carolina College at Durham in Durham.

During 1948, two Statewide health education conferences were held in Raleigh and two district staff conferences in Greensboro and Asheville. In addition, health educators attended the Annual Working Conference in March, 1948 at Chapel Hill sponsored by the School of Public Health, University of North Carolina.

During 1948, there were an increasing number of opportunities for cooperative health education and closely allied programs with several local and State agencies and organizations and with other divisions of the North Carolina State Board of Health.

FIELD REPRESENTATIVE SERVICE: The staff of three Field Representatives was decreased to two by the resignation of Miss Geneva Drye in August, 1948.

The general plan of giving consultation and advisory service to local health department clerks and secretaries was continued. Whenever possible the nursing consultants visited the local health departments with the field representatives and their assistance proved most helpful in interpreting reports to the entire staff.

One of the major projects during the year has been to complete the preliminary draft of a proposed new report. This is designed to replace the present statistical which has been in effect since 1936 and is based on the Evaluation Schedule of the American Public Health Association. Dr. William P. Richardson, Assistant Director of the Division of Local Health Administration, laid the groundwork for this report before he resigned in July, 1948.

In the late fall it was reviewed and changes made by the directors of the

State Board of Health. The present plans are to send a copy to each health department for comments, criticism, and suggestions before the final draft is made and put in effect by January, 1950.

VENEREAL DISEASE CONTROL:

The program of venereal disease control has emphasized largely the treatment of early syphilis in the two rapid treatment centers located in Charlotte and Durham. All cases are referred to the rapid treatment centers by the local health departments and by private physicians.

During the calendar year 1948 the total admissions to the two rapid treatment centers were 7,534. As of December 31, 1948, since the centers opened 41,390 patients have been admitted. Practically all of the gonorrhea cases have been treated outside of the centers either by private physicians or local health departments. The number of cases of syphilis reported during the year 1948 was 7,313 as compared to 8,724 in 1947. The number of cases of gonorrhea reported during the year 1948 was 14,962 as compared to 14,169 in 1947.

Venereal disease reporting was simplified by combining reporting of the cases and its disposition by the use of one card rather than two separate cards as had been done previously. A simplified form for a transcript of the treatment sent by the rapid treatment centers to the physicians and local health departments was instituted. It includes a graphic record for titer serology follow-up of the patient indicating relapse before clinical signs appear.

Three one week refresher institutes were held for nurses and public health investigators. Instruction was provided by members of the staff of the school of Public Health at Chapel Hill and the Eastern Medical Center at Durham.

In spite of vacancies on the staff, and many other discouraging difficulties, the Division of Local Health Administration has devoted loyal and faithful service in aiding local health departments. These local health departments themselves have been confronted with many diffi-

cult and perplexing problems, nevertheless they have maintained a steadfast determination to render a great service to the people of our State. They face the future confident that in the coming year a definite step forward will be made in protecting the health of all the people in North Carolina.

HEALTH PUBLICATIONS INSTITUTE—Mr. Capus Waynick, Director

Although its funds are derived from the United States Public Health Service and from the Zachary Smith Reynolds Foundation, Health Publications Institute, formerly known as Venereal Disease Education Institute, operates as a division of the State Board of Health. Its purposes are to:

1. Develop and produce methods and materials for public education in the field of public health.
2. Evaluate such materials before and after production.
3. Facilitate the distribution of tested health education materials.

The outstanding achievement during 1948 was the change in name from Venereal Disease Education Institute to Health Publications Institute to the end that educational work in behalf of the venereal diseases might be more effectively integrated with all aspects of public health, and in order that the Institute might more effectively fulfill a demand for its type of services in all fields of public health.

The corporate activities of the Institute are controlled by the North Carolina Social Hygiene Society, Inc., a non-profit corporation, of which the State Health Officer is a director.

The State of North Carolina makes no appropriation whatsoever to the budget of the Institute except to provide quarters. In exchange for these quarters the Institute makes available its educational materials to North Carolina health agencies without charge.

During the year 1948, a total of 3,986,400 items of the Institute's materials were distributed to every state in the Union and 32 foreign lands. Approxi-

mately 10 percent of these materials went to North Carolina State and community agencies. It is significant that the rate of distribution during the later months of the year was more than double the rate during earlier months.

A high light of the Institute's services during 1948 included the preparation of four comic books setting forth the facts about the venereal diseases in simple language for the special use of the Department of the Army and the beginning of a research project for the Department of the Navy to test the educational value of printed materials.

Until April 1, 1948, the Institute and the North Carolina Social Hygiene Society, Inc., had been directed by Capus M. Waynick. As of that date Mr. Waynick resigned and was succeeded by Felix A. Grisette. On November 1, Mr. Waynick returned as director of the Society but Mr. Grisette continued as Director of the Institute.

REYNOLDS RESEARCH LABORATORY—Harold J. Magnuson, M. D., Research Professor of Syphilology

Research Activities: The chief research activities of this laboratory have been directed toward problems in the field of experimental syphilis, with particular reference to problems of immunity in this disease.

Work has also been done with certain antibiotic producing strains of *Escherichia coli* in an effort to determine their importance relative to naturally occurring *Shigella* infections.

Chemotherapeutic activities have been directed toward the study of physical and chemical factors influencing the stability and rate of rearrangement of certain organometallic compounds, particularly of antimony.

Publications: "The Minimal Infectious Inoculum of *S. Pallida* (Nichols strain), and a Consideration of Its Rate of Multiplication in Vivo," Harold J. Magnuson, Harry Eagle, and Ralph Fleischman, *Am. J. of Syph., Gonor., and Ven. Dis.*, Vol. 32, pp. 1-18, Jan., 1948.

"Studies with Antibiotic Producing

Strains of *Escherichia Coli*," S. P. Halbert and Harold J. Magnuson, *J. of Immunol.*, Vol. 58, April, 1948.

"Bismuth Plus Penicillin in The Treatment of Experimental Syphilis," Harold J. Magnuson and Barbara J. Rosenau, *Am. J. of Syph., Gonorr., and Ven. Dis.*, Vol. 32, pp 203-211, May, 1948.

"The Rate of Development and Degree of Acquired Immunity in Experimental Syphilis," Harold J. Magnuson and Barbara J. Rosenau, *Am. J. of Syph., Gonorr., and Ven. Dis.*, Vol. 32, pp 418-436, Sept., 1948.

"Current Concepts of Immunity in Syphilis," Harold J. Magnuson, *Am. J. of Med.*, Vol. V. pp. 641-654, Nov., 1948.

"The Treatment of Asymptomatic Neurosyphilis in the White Mouse," Harold J. Magnuson and Barbara J. Rosenau, *J. Invest. Der.*, Vol. 11, pp. 435-441, Dec., 1948.

"The Antagonism of Coliform Bacteria Against *Shigellae*," S. P. Halbert, *J. of Immunol.* 58: Feb., 1948.

"The Relation of Antagonistic Coliform Organisms to *Shigellae* Infections. I. Survey Observations," S. P. Halbert, *J. of Immunol.*, Vol. 60, pp. 23-36, Sept., 1948.

"The Relation of Antagonistic Coliform Organisms to *Shigellae* Infections. II. Observation in Acute Cases," S. P. Halbert, *J. Immunol.*, Vol. 60, pp. 359-381, Nov. 1948.

Administrative: As of July 1, 1948, this laboratory, formerly the Reynolds Research Laboratory, became the Syphilis Experimental Laboratory, of the U. S. Public Health Service. As such, it is operating as a field station of the Public Health Service, with the participation of the University of North Carolina and the North Carolina State Board of Health in providing space and facilities.

Teaching Activities: As in previous years, the laboratory serves as the Department of Experimental Medicine in the School of Public Health, University of North Carolina, and the director of the laboratory gives courses in venereal disease control for the health officers,

nurses, and other students in the School of Public Health.

FIELD EPIDEMIOLOGICAL STUDIES OF SYPHILIS—John J. Wright, M. D., Director

The field epidemiological studies of syphilis which have been in progress at the School of Public Health, University of North Carolina since 1940 under the direction of Dr. John J. Wright, have continued to receive the support of the North Carolina State Board of Health and the International Health Division of the Rockefeller Foundation. The study area used consists of the counties of Durham, Orange, Person and Chatham. This provides a satisfactory sample of urban and rural living conditions and health departments typical of this area. Detailed and accurate data has been continuously gathered to provide a base line of information regarding syphilis in the various sections of the population in the study area by race, age, sex, marital and socio-economic status. A good deal of information has also been collected relating to gonorrhea. Analysis of the data which have been acquired make it possible to determine the effectiveness of control methods which have been in use by health departments.

During this year the bulk of the clerical tasks involved in preparing the large accumulation of data for detailed analysis was completed. As a result, it was possible to reduce the clerical staff by two clerks who had previously been employed on a temporary basis. The efforts of the study staff are now being concentrated upon the analysis of the data. At the same time, the accumulation of basic data is going forward in a routine fashion so that continuing studies may be carried out.

The following studies have been completed and submitted for publication during this year:

1. An evaluation of case-finding measures in syphilis control.
2. An evaluation of case-finding measures in multiple episodes of infectious syphilis.

3. An evaluation of case-finding measures in the control of gonorrhea.

These studies have focussed attention on the relative effectiveness of the major case-finding procedures in different types of cases and carry certain rather definite implications so far as the actual administration of venereal disease programs is concerned. For example, it was found that contact investigation was responsible for bringing 38.1% of all the newly discovered cases of primary and secondary syphilis to the attention of the health departments. The effectiveness of contact investigation is bringing new infectious cases of syphilis to diagnosis and control varied greatly between the sexes. It was responsible for the discovery of 50.6% of the female cases of primary and secondary syphilis as compared with 24.4% of the similar male cases.

A similar analysis of case-finding procedures was done on a series of cases of infectious syphilis with lesions due either to relapse or re-infection, which occurred in patients who had received previous treatment for syphilis. Inasmuch as all the patients in this series had been given previous treatment, they had all received a measure of directed venereal disease education. It might, therefore, be expected that such individuals would present a different type so far as the relative effectiveness of various case-finding procedures was concerned. Our data did not bear out this expectation. The problem of discovering and bringing under control those persons who have multiple episodes of infectious syphilis was found to be essentially the same as discovering first infections.

In regard to the discovery of cases of gonorrhea, our analysis showed that contact investigation was very effective and of crucial importance in bringing female cases under control and was very much less effective among males. For example, it was found that the number of previously untreated cases of gonorrhea brought under control as a result of the investigation of 100 female contacts was more than four times the

number of such cases resulting from the investigation of 100 male contacts.

Studies are proceeding on the basis of which it is expected to complete reports in the coming year dealing with the following problems:

1. The effect of the military venereal disease educational program as reflected in health department experience with gonorrhea.

2. Indices in the epidemiology of syphilis.

3. The cost of contact tracing in syphilis control.

4. Trends in the syphilis attack and discovery rate.

5. Syphilis in parturient women as an index to the trend of syphilis in the general population.

6. The probability of contracting syphilis by race, sex and age.

In addition to the work of the Study itself, various members of the staff have participated in educational activities relating to venereal disease control with special emphasis on the value of the epidemiologic approach. These have included the assumption of some teaching responsibilities in the School of Public Health, University of North Carolina, the State Health Department, a number of local Health Departments, the Rapid Treatment Centers of North Carolina, and the Eleventh Venereal Disease Postgraduate Course given by the U.S.P.H.S. at Hot Springs, Arkansas. In March and June, the professional members of the Study Staff played an active role in the planning and actual conduct of three Institutes in Venereal Diseases Control held at the Eastern Medical Center in Durham. Instruction was given in these institutes to fifty-nine nurses and venereal disease investigators representing forty-two health departments throughout the State.

DIVISION OF EPIDEMIOLOGY AND VITAL STATISTICS—C. P. Stevick, M. D., Director

The most outstanding communicable disease occurrence in 1948 was an outbreak of poliomyelitis that affected a large part of the State.

A total of 2,513 cases was officially reported, the largest number of cases of this disease ever recorded in North Carolina. One of the most unusual features of this outbreak was that the centers of highest incidence were within the same general area of the west central part of the State as that involved in 1944 when the largest previous outbreak occurred, totaling 878 cases.

On the basis of preliminary tabulations, there were no outstanding changes over previous outbreaks in regard to race, sex, and age distribution or severity of the cases. The incidence increased sharply during June and reached a peak approximately in the middle of July. The decline was slow and continued to the close of the year. There were 147 deaths provisionally reported, resulting in a case fatality rate of 5.8 percent.

The facilities of the Division were taxed to the utmost in supplying information to the general public, the state health agencies of other states, and to private physicians and local health departments of our own State. Assistance was given in the planning of local health department policies with regard to the outbreak and in cooperating with the National Foundation for Infantile Paralysis in facilitating medical care. Largely due to the efforts of the latter organization, a network of hospital centers had been established throughout the State during the previous three years where extra equipment was available and for which additional personnel was secured at the time of the emergency. The American Red Cross gave invaluable service in regard to nurse recruitment.

The communicable disease incidence of the State with respect to other diseases was generally favorable. Chancroid cases totaled 381, the lowest number since 1941. Diphtheria established a new record low with a total of 485 cases. The previous record low was in 1946 when 584 cases were reported. The mortality rate for this disease was also at a new low. Endemic typhus fever reports were smaller in number than for

any year since 1936. The total was 43 cases, which represents a continuation of the decline that has persisted since 1944 when 231 cases were reported.

Gonorrhea cases had been rising steadily up to last year due to better reporting and case-finding. In 1947, a sizeable decline occurred that was interpreted as possibly representing a beginning actual decline in the incidence of this disease. There was a slight rise in 1948, the total of 14,169 cases still comparing quite favorably with the 16,082 of 1946. Apparently, additional time will be required to determine whether or not there has been any true decrease in gonorrhea incidence.

Although malaria incidence has remained at about the same low level for the past several years, up to the present time 1948 has brought no malaria death reports, making it appear that this will be the first year in our history with no deaths from this disease.

Scarlet fever reports reached a new low in 1948. The mechanism of this decline is not clear. Scarlet fever incidence remained fairly uniform for many years and then in 1946 suddenly declined. Additional declines have appeared in 1947 and 1948. There is no reason to believe that the change is due solely to increasing lack of efficiency in reporting. The widespread use of penicillin and sulfa drugs may be a factor in reducing streptococcus infections in the population generally.

Syphilis underwent a postwar rise in 1946, but then continued the decline begun in 1939. The decline has now continued for the second successive year, the 1948 rate being 196.7 cases per 100,000 persons. This is the lowest rate since 1936 and is a remarkable reduction from the highest rate ever recorded, 876.8 in 1939. One of the most encouraging features of the 1948 decline is that the number of early infectious cases has been considerably reduced. The 1948 total of primary and secondary syphilis cases is 2,992 as compared to 4,059 for 1947.

Tuberculosis is also in the group of communicable diseases undergoing a

steady decline. The decline has occurred in the fact of expanded case-finding activities. The 1948 provisional tuberculosis mortality rate is 25.6 deaths per 100,000 or one-sixth as high as the rate when death registration began in 1918. There were 3.5 cases reported per death in 1948. This compares very favorably with the ratio of 1.2 cases per death in 1943, five years ago, when the case-finding program had not reached its present efficiency.

Typhoid and paratyphoid fever showed a slight increase in 1948. Except for this year and 1944, there has been a steady decline in typhoid fever since 1935.

Whooping cough cases and deaths reached a new twelve-year low in 1948. It is of considerable public health importance to note that pertussis continues to be a more important cause of death than diphtheria. The provisional death totals for these two diseases in 1948 are diphtheria 26 deaths and pertussis 50.

Among the other reportable communicable diseases, changes were not outstanding. Both Rocky Mountain spotted fever and tularemia, which had risen to record high rates last year, declined slightly in 1948.

The 1948 provisional death rate showed no change over 1947. The increase in cancer and heart disease deaths have offset decreases that have taken place with respect to other diseases.

Infant deaths have now declined to the provisional rate of 34.7 deaths per 1000 live births. The provisional maternal mortality rate rose slightly to 1.9 deaths per 1000 live births over that of 1947, which was 1.8. In 1947, there were fourteen states with higher infant mortality rates and ten with higher maternal mortality rates.

Among the causes that resulted in fewer deaths in 1948 than in 1947 are automobile accidents, diabetes, pneumonia, nephritis, and prematurity. Causes showing an increase are accidents other than auto, cancer, heart disease, homicide, apoplexy, and suicide.

The 1947 total of 111,282 births and the rate of 29.9 births per 100 population will probably not be surpassed by the final 1948 totals. Although a decline did not occur during the past year, it was not as pronounced as was expected since the estimated birth total for 1948 is now set at approximately 110,000. The 1947 rate was the highest since 1924. It is to be expected that our rate will return in the near future to the pre-war rate of approximately 25.

The activities of the Division in promoting communicable disease control throughout the State have been continued. Numerous field consultations with health department staff members have been held. The typhoid carrier register has had several names added during the year. At the close of 1948, there were 95 names of carriers on record.

A number of administrative improvements were made in the vital statistics work during 1948. In several additional counties, the registration of births and deaths was taken over by the full-time health department in accordance with the provisions of the State law. As of January 1, 1949, there were thirty-seven counties in which the health officer was registrar. Field work to assist registrars, hospitals, physicians, and undertakers in improving the efficiency of registration was carried out much more widely in 1948 than previously. A definite improvement in the promptness and accuracy of reporting births and deaths took place during the year.

One of the most serious bottlenecks in the operation of the vital statistics office has been the lack of a usable index with which to locate certificates for follow-up purposes and for the issuance of certified copies. By taking advantage of every opportunity, a sizeable part of the index has been replaced in the last two years. As soon as additional work has been done, not only will service be more prompt, but also personnel will be available for improving the completeness of the statistical service.

Increasing demands are being made on the Division for detailed morbidity

and mortality statistics. One of the current objectives is to expand the statistical facilities so that health departments, private physicians, medical schools, and other appropriate agencies will be able to secure more complete statistics. Such a service will do much to help solve many of today's important problems regarding public health and medical care.

During the year the **Malaria Control Unit** of the Division of Epidemiology and Vital Statistics took 2,203 blood slides during malaria surveys of school children. A total of 5,644 blood slides was examined, most of which were taken during surveys the previous year. Practicing physicians were invited to submit malaria blood slides to the unit for the purpose of having their diagnosis confirmed. One thousand fifty-five such slides were examined in addition to those on the regular survey. For the past three years, there have been no positive slides among those taken during regular school surveys. Scattered positive slides obtained by private physicians are still being received, however.

Pond building continued on a large scale. This was chiefly due to promotional efforts on the part of the U. S. Soil Conservation Service and the State Agricultural Extension Service. Both of these agencies cooperate fully with the North Carolina State Board of Health in seeing that ponds built under their supervision conforms as nearly as possible with the malaria control regulations.

During the year 712 pond inspections were made. Impounding permits were granted to 292 individuals. One hundred ninety-seven other applications were received for ponds that have not yet been built or have not been finished in accordance with the regulations of the State Board of Health. Permits for these are being withheld until the ponds are made to conform with the requirements.

From the advent of the work relief program in 1933 to the beginning of World War II, an extensive drainage program was carried on with labor furnished by the CWA, ERA, and WPA

under the supervision of the North Carolina State Board of Health for the elimination of malaria mosquito-breeding areas. On this program 2,956 miles of hand ditches were dug and 372 miles of machine canals constructed to drain 98,606 acres of water surface. In addition, 72 acres of ponds were eliminated by filling. The reduction in malaria that has occurred in recent years is probably, to a large extent, due to these control measures. Applications for ponds that have already been built or are now being constructed show that they have combined area of 18, 459 acres. These ponds provide a water surface 18.8 per cent as great as that which was eliminated on the drainage program. If the present rate of construction continues, in a few years new, potential malaria mosquito breeding surface may equal or surpass that which was destroyed on the drainage program. This is a situation to be viewed with concern. The extent and scattered location of these ponds will almost completely preclude the possibility of their being given adequate inspection and supervision by existing public health facilities. In the event of an economic recession, it is highly probable that satisfactory maintenance would be neglected. This could easily result in a rise in the incidence of malaria to a point never before reached.

The DDT residual spraying program continues to be the major activity of this Unit. During the year 81,784 homes were sprayed, using a total of 74,830 pounds of technical DDT. The federal government contributed \$105,025 towards the cost of this activity, and the state and local government provided \$130,470, the average cost per house being \$2.88.

The Unit continued the promotion, organization, and general supervision of fly control projects in areas not served by the malaria control residual spraying program. This activity expanded greatly during the year. Eight thousand five hundred sixty-six gallons of DDT concentrate were sold at cost to local

health departments for use in fly control.

DIVISION OF SANITARY ENGINEERING—Mr. J. M. Jarrett, Director

Introduction: The following is a very brief summary of activities of the personnel of the Division of Sanitary Engineering during the calendar year, 1948. More complete reports of activities have been submitted monthly to the State Health Officer and members of the State Board of Health, therefore, no attempt will be made in this report to cover details of the work.

Administration: Although our staff continued to become more stabilized, during the year we had a number of resignations which interfered with the operations, efficiency, and accomplishments of this Division. Two secretaries, the office engineer, and one district sanitarian submitted their resignations. The office engineer has been replaced, another engineer has been employed to replace the sanitarian resigned, and an additional sanitarian was employed to fill a vacancy existing at the beginning of the year. Mr. Hendren and Mr. Lyle, who had been assigned to the Lexington milk shed, but who were paid from this office, were transferred to the Davidson County Health Department, effective July 1, as the local department was assuming the milk control activities in that area.

During the year, the usual number of conferences were held with officials of the Public Health Service and State agencies concerned with sanitation problems. Assistance was given the TVA, the Budget Bureau, the Department of Public Instruction, the State Department of Public Welfare, the State Highway and Public Works Commission, the Hospitals Board of Control, and a number of State Institutions. Close cooperation was maintained with the above units, as well as with the State Department of Agriculture, the School of Public Health at Chapel Hill, the State College Extension Service, the State Department of Conservation

and Development, and all local Health Departments.

Some of the highlights of the various activities are enumerated below.

Sanitary Engineering: The cooperative program with the U. S. Geological Survey and State Department of Conservation and Development, in connection with the chemical analysis of all public water supplies, was continued. This project was completed during the year—160 samples being examined. Work was begun on a similar project which will cover all State Institutions.

An inventory of all public water and sewerage systems was compiled for the U. S. Public Health Service. This listing included names of towns, date plants or systems started, the type or degree of treatment afforded, streams used, wells or surface supplies, etc.

Cooperation and assistance were given the State Stream Sanitation and Conservation Committee in conducting studies of stream pollution problems. The Director appeared as a witness in the court case—Smithfield vs the City of Raleigh—but no decision has yet been rendered by the courts.

Assistance was also given a number of towns, by the engineers, in locating or selecting sites for new wells; as well as assistance in connection with operation and construction problems, and in connection with proposed developments or extensions to existing water and sewerage systems.

The amount of actual construction work undertaken during the year by the municipalities has been very encouraging. For several years we have been more in the planning stage, than in making actual improvements; however, this much needed work is now going forward, and during the past year projects in 41 separate cities were completed at an estimated cost of \$8,161,000. These projects included all types of improvements from a new cover for the elevated water tank at Ayden, costing \$2,000, to a new water plant and sewer extensions at Burlington, costing \$1,150,000, and water plant improvements and extensions at Charlotte, costing an esti-

mated \$2,000,000. These improvements were long overdue, because of the restrictions imposed during the war years, and will greatly improve the existing facilities in the town where these improvements have been made.

More attention was also given to the operation of water and sewage treatment plants and problems, and assistance was given in connection with the Water Works Operators' Course which was held during the past year at the University of North Carolina, School of Public Health.

A program of municipal garbage disposal by the sanitary land-fill method was also inaugurated by the engineers. Considerable progress has been made during the 12 months in connection with this activity.

Sanitation: A great deal of time was devoted to the revision of regulations pertaining to the meat and poultry industry. Surveys were made of all known poultry processing and freezer locker plants, and conferences were held with the operators, and others concerned, in developing regulations for the sanitation of these places. Excellent cooperation was received, and the results are now beginning to show the wisdom of this approach to the problem. At the present time we have a list of 91 frozen locker plants, most of which have been built within the past four years. The sanitation of these places is, for the most part, very satisfactory.

There are 164 abattoirs now operating in the State, and the regulations were revised to improve the sanitation of these places.

Poultry Processing Regulations were not put into effect until late in the year, most of the time being devoted to educational work, and assistance to the owners and operators. A large number of new plants are now under construction, or planned, and the sanitation of this unit of the meat industry should show marked improvement during the next year.

With regard to milk sanitation, our efforts have been confined to assisting local health units, since the Milk Laws

are so confused at present. A Study Committee, authorized by the last Legislature, made a superficial study of the problem and reported to the Governor at the beginning of the 1949 Legislative Session. No action has been taken on the Majority or Minority Reports submitted, and it appears now that none will be taken during this term of the General Assembly.

Time was also given to working with other states and the U. S. Public Health Service in trying to develop some satisfactory system regarding the interstate shipment of milk. The program of promoting the establishment of local area milk laboratories also progressed, and some progress was made in establishing reciprocal milk shed inspections within the State. Too much concentration of effort was not placed on this phase of the program because, also, of the uncertainty of the position to be played by the State Board of Health in connection with milk sanitation in North Carolina. Two new milk pasteurization plants were placed in operation.

The sanitarians assisted with food-handling improvements throughout the State, and a real service was rendered in a number of cases through the development of plans, sketches, equipment layouts, etc.

All State Institutions were surveyed, and reports submitted to the proper authorities.

Close cooperation was given the Medical Care Commission in connection with hospital planning, and the provision of proper sanitary facilities was incorporated in the plans for the units to be built. This activity has required considerable time, but, in our opinion, is of great public health and sanitary significance, since we are placing ourselves in the position of helping to get the proper equipment and facilities constructed, which will certainly make for better operations and more sanitary operations in years to come,

Assistance was given local Health Departments and institutional staffs in conducting classes for foodhandlers.

Surveys were made of all hotels and

summer camps during the year, and considerable improvement was noted in this particular activity.

Surveys were made of shellfish growing areas, and routine inspections made of all shellfish shucking houses. A laboratory was placed in operation at Morehead City, in cooperation with the Division of Commercial Fisheries of the State Department of Conservation and Development.

Much time was spent working with committees on the preparation of bulletins to be issued by the Department of Public Instruction relative to lunchroom operation.

Assistance was given the Federal Housing Administration on the inspection

and processing of FHA applications, as to water and sewage disposal at these residences.

The Typhus Fever and Rodent Control Program was continued in the same manner as last year. The availability of funds from the U. S. Public Health Service controls the degree of expansion of this program. Individual property owners spent \$74,881 in the ratproofing of buildings during the year.

Bedding: This program has been carried on in a routine manner, as in past years, with two men devoting full time to this activity.

A numerical summary of inspections and visits made by the personnel of the Division during the year is attached.

NUMERICAL SUMMARY OF ACTIVITIES

Jan. 1, 1948—Dec. 31, 1948

Engineering

Filtration plant inspections	222
Chlorination plant inspections	64
Iron removal plant inspections	20
Well supplies inspected	138
Well sites examined and approved	43
Water samples collected and examined	100
Special investigations conducted (water supplies)	70
Treatment plant inspections	383
Sewer system inspections	64
Stream pollution problems investigated	38
Plant site investigations	99
Special investigations conducted (sewerage systems)	89
Sand analyses	27
Water supply plans approved	45
Sewage works plans approved	57
Swimming pool plans approved	6
Hospital plans approved	5
Sewage plant plans furnished	113
Well house plans furnished	8
Swimming pool plans furnished	5
Grease disposal unit plans furnished	10
Miscellaneous plans prepared	47
Swimming pools investigated	48
Outdoor bathing places investigated	51
Hospital sites inspected	46
Existing hospitals inspected	5
Source of water supply examined for interstate carriers	24
Watering points examined	53
FHA developments investigated	53
Town or county board meetings attended	31
Special conferences with engineers, city & co. officials	356

Premises inspected for ratproofing and eradication	11853
Establishments ratproofed	740
Cost to owners for ratproofing	\$74881
Premises treated (eradication)	3160
Premises inspected for DDT dusting	58107
Premises treated (DDT)	33344
Pounds of DDT dust used	45308
Premises treated (poison)	22646
Local campaigns supervised (rat poisoning)	20

Sanitation

Milk plant inspections	200
Dairy farm inspections	1413
Milk surveys completed	47
Milk plant plans reviewed	23
Special investigations—milk	9
Milk samples collected	2026
Foodhandling establishments inspected	2057
School lunchroom inspections	80
Abattoir and meat processing plant inspections	194
Meat market inspections	788
Frozen food locker plant inspections	119
Poultry plant inspections	392
Plans reviewed for foodhandling establishments	397
Foodhandler schools held	26
Private water supply inspections	229
Private sewage disposal inspections	433
Privy inspections	299
Summer camp inspections	52
Institutions inspected	215
Hospital plans reviewed	40
Public school inspections	46
Swimming pool inspections	9
Hotel and tourist camp inspections	486
Complaints general sanitation	205
Special investigations	125
Special Meetings	322
Shellfish packing plants inspected	1,126
Retail seafood markets inspected	195
Water samples examined for shellfish-growing areas	157
Patrol inspections of restricted waters	114
Plans distributed	202
Number of FHA cases processed	757
Number of court cases	27

Bedding

Retail places inspected	2,312
Manufacturing plants inspected	3,634
Pieces of bedding condemned	4,372

DIVISION OF ORAL HYGIENE—E.

A. Branch, D. D. S., Director

From my experience as a City Health Officer, I believe I have first hand knowledge of the activities of the Division of Oral Hygiene and I would like to present this part of my report from the viewpoint of a county or city health officer.

To my City, with an elementary school population of approximately 5,000 children, the white and Negro school dentists were assigned for a total of twenty weeks. During their stay they were accepted as members of my staff. Prior to the dentists' arrival their tentative schedules in the schools were arranged in conferences with the City Superintendent of Schools and the Principals, who were eager for the service.

Briefly and statistically, their accomplishments during a typical program were as follows. All of the nine City schools were visited. The dentists taught the importance of having clean, healthy mouths, as well as good dental health practices, to 5,000 children in their own classrooms. The mouths of these children were inspected, and the necessary dental corrections were made for the 1,000 children, approximately, who were classified by their teachers as being underprivileged. The parents of the privileged children, found to need dental attention, received postal cards, signed by the school dentists, suggesting that they take their children to their own family dentists.

As impressive as are these facts and figures, even more important are some of the intangible benefits of the dental program. We cannot estimate the amount of pain and illness, both dental and systemic, prevented by the early detection and correction of dental defects. And it is difficult to realize the great values accruing to the individual and the community from the establishment in the minds and attitudes of the children of a friendly feeling toward the dentist and an appreciation of good dental health.

As City Health Officer, I recognized the advantage of such a program con-

ducted by dentists trained in children's dentistry, child psychology, and methods of teaching; working under the supervision of the Director of the Division of Oral Hygiene. As State Health Officer, I covet this service for every county and school in our State.

The report for the year, 1948, is as follows:

Number of counties receiving dental service	43
Number of schools receiving dental services	457
Total number of children receiving dental inspection	57,271
Total number of children receiving dental corrections	26,296
Number of children referred to local dentists	30,975
Number of lectures on Oral Hygiene by school dentists	1,333
Total attendance at lectures	59,994

It should be noted that not quite one-half of the counties of our State participated in the service and no county received as much time as was needed. Both of these conditions were due to the shortage of dentists on the staff. However, this year marked the greatest increase in the staff since the war. Four well trained dentists were added to the staff, and it is our hope and belief that this upward trend will continue.

The dental corrections made by the school dentists include amalgam and cement fillings, silver nitrate treatments, extractions, prophylaxes, and sodium fluoride applications. This latter treatment was offered for the first time this year. In keeping with the recommendations of the American Dental Association and the U. S. Public Health Service that a two percent solution fluoride be applied topically to the teeth of children as a preventive measure, the State school dentists now give this treatment to as many of the underprivileged children as possible.

In cooperation with the Laboratory of Hygiene, the Division of Oral Hygiene supplies the dentists in private practice with the solution, upon request. The demand for the solution indicates that its use is widespread.

The educational part of the program does not stop when the dentist leaves the school for, in addition to this teaching in the classroom and at the chair, the dentist has with him dental health teaching aids to give to the teachers. We realize that it is the classroom teacher who will make the dentist's message a part of the everyday living of the children in her grade. This material is available, free of charge, to all of the elementary teachers in the State and is being extensively used by them.

For further follow-up in the Mouth Health Education Program Little Jack's puppet show completed its thirteenth year. The show was witnessed, in 1948, by 156,184 children. Thousands of these children wrote to Little Jack and received answers from him. As further proof of their friendship and admiration for Little Jack hundreds of children on their pilgrimages to the Capital City, visited the dental health museum, known as "Little Jack's House," in the Oral Hygiene Building.

From this summary of the work of the Division of Oral Hygiene one is impressed with the fact that the activities are all directed toward the accomplishment of the goal and motto depicted in the mural in the Oral Hygiene Building, "Prevention through Education."

STATE LABORATORY OF HYGIENE

John H. Hamilton, M. D., Director

The State Laboratory of Hygiene for the year, 1948, can report an increase in the services which it renders to the public health cause. There has been an actual increase in the total number of laboratory examinations. A wider variety of biological products have been distributed.

As we look more closely we note increases in the number of microscopic agglutination tests for typhoid fever, undulant fever, the rickettsial infections, Tularemia and the heterophile antibodies.

There has been a slight decrease in the number of specimens of feces examined for intestinal parasites.

There was an increase in the number

of animal heads sent to be examined for rabies, but a decrease in the number of those in which evidence of rabies could be found either by microscopic search for Negri bodies or from animal inoculations.

There was an increase in the number of specimens of blood sent for culture for typhoid and a decrease in the number of those in which the typhoid organism could be found. It would seem that our Health Officers are more alert in seeking to find typhoid carriers. There was an increase in the number of specimens of feces sent for typhoid culture and also an increase in the number in which the organism could be isolated.

A decrease in the prevalence of diphtheria probably explains the decrease in the number of throat cultures.

There was a decrease in the number of urethral smears on microscopic slides which we were requested to examine for the gonococci and a decrease in the number of specimens we were requested to culture for this organism; also in the number of positive cultures.

Serological tests for syphilis still give us our largest number of specimen examinations of a single type. There were 402,224 serological tests for syphilis performed during the year—of these 2,089 were specimens of spinal fluid.

We have continued our study of the cardiolipin antigens and are using them in our titrated or quantitative serological tests for syphilis. These titrated tests are restricted to those patients who have received Penicillin treatment for syphilis outside the Rapid Treatment Centers and to those infants who are suspected of having congenital syphilis—1,353 of these titrated serological tests for syphilis were performed during the calendar year, 1948.

Our Serological Group has also performed 449 complement fixation tests for Endemic Typhus on both rat and human blood.

In 1948 we examined 9,075 specimens of water as compared with 8,091 in 1947.

In studying the report of biological products distributed during the year, 1948, it is possible to detect certain

trends; for instance, as compared with the previous year, there is a decrease in the amount of alum precipitated diphtheria toxoid which was distributed as a single antigen. There is an increase in the amount of diphtheria toxoid combined with pertussis vaccine and also an increase in the amount of triple antigen containing diphtheria and tetanus toxoids combined with pertussis vaccine. There was a decrease in the amount of pertussis vaccine distributed as a single antigen, although the volume still remains high. There were increases in the amount of pertussis vaccine distributed as a part of combinations with diphtheria toxoid and in the triple antigen. The total number of immunizing treatments distributed has increased not only for pertussis but for diphtheria and tetanus, if we total that used as single antigens and that used as multiple antigens. The trend is definitely toward the use of multiple antigens.

Since most of our deaths from whooping cough are in children under four months of age, we should continue to urge that pertussis vaccine be given to children between two months and four months of age and that pertussis vaccine be included with the diphtheria toxoid which is administered to children from six months to one year of age.

There was an increase in the amount of typhoid vaccine distributed in 100cc vials but a decrease in the amount distributed in 10cc and 50cc vials. With the increase in use of the intradermal method of administering typhoid vaccine, it is almost impossible to give any accurate estimate of the number of persons receiving protective doses of the vaccine.

There has been a decrease, although slight, in the amount of smallpox vaccine distributed.

The number of antirabic treatments distributed has also decreased slightly.

The fact that we had fewer patients with diphtheria explains the decrease in the amount of diphtheria antitoxin distributed.

There continues to be a decrease in the demand for neoparsphenamine.

During the year the American Red Cross has provided use with Immune Serum Globulin for use in the control of measles and has enabled us to distribute more than 9,000 packages of Blood Plasma. We are assured that there will be a continuing supply of Immune Globulin but have been notified that no further supplies of Blood Plasma will be available for distribution.

During the year we distributed 19,268 cc of Rocky Mountain Spotted Fever Vaccine which was furnished to the Laboratory by the United States Public Health Service. We have also been informed that the National Institute of Health has discontinued the preparation of Rocky Mountain Spotted Fever Vaccine and that none of this vaccine will be available to us in 1949.

In June of 1948 Dr. S. E. Miller, Sr. Surgeon, U. S. Public Health Service, reviewed the activities of the State Laboratory of Hygiene. The following excerpt from Dr. Miller's report forms the basis on which we can report further progress.

"The equipment and supplies are also excellent, and the arrangement shows the results of much thought and good planning. All this without a good technical staff would be of no avail. However, there has been collected here a number of thoroughly competent and experienced persons, so that each working group has competent, constant supervision.

The technical procedures, with but minor exceptions are standard and the best available."

Among the improvements which have been made in conformity with Dr. Miller's review are added services in virus and rickettsial serology. The State Laboratory of Hygiene was designated as one of several laboratories in the nation which would perform serological tests for epidemiological influenza. Some of Dr. Miller's recommendations such as rendering of services in clinical pathology would call upon us to depart from policies which we have followed in the past.

The laboratory staff now feels that

they can render increased service in North Carolina's expanded health program.

SCHOOL-HEALTH COORDINATING SERVICE—C. P. Stevick, M. D., Co-Director, Charles E. Spencer, M. A., Co-Director

The North Carolina School-Health Coordinating Service which is sponsored by the State Department of Public Instruction and the State Board of Health, officially represented both agencies in the school health and physical education programs in North Carolina during the period January 1, 1948 to December 31, 1948.

In carrying out this responsibility the staff members worked with school superintendents, principals and teachers, with public health department personnel, and with representatives of other agencies interested in the health of children, youth and adults.

Program of Health and Physical Education: The program of the School-Health Coordinating Service included: (1) Health Services, (2) Health and Safety Education and (3) Physical Education. In practice these components are intimately coordinated.

The health service phase of the program has been organized to achieve three objectives: (1) To find school children with health problems and arrange for their correction, (2) To establish as healthful an environment as possible to protect the health of the population, and (3) to promote the use of health services as teaching aids in health education.

The health education activities are directed toward the establishment of adequate health instruction of school children so that they will develop the habits, attitudes and understandings necessary to maintain themselves at a high level of general physical and mental health and to avoid the serious life time health hazards.

The physical education activities are aimed at promoting a program that will reach all of the children of the public schools in terms of their needs, interests,

and abilities worthwhile educational goals.

Major Activities of Past Year:

1. Initiated a State-wide curriculum project in health education, physical education and safety.

- a. Approximately one hundred cities and counties have organized committees for local studies.

- b. District meetings were held in six areas of the State for the Chairmen of local committees, health department representatives and for college representatives.

- c. Two State conferences have been held for school and health department personnel, for representatives from colleges that prepare teachers and for representatives of other agencies, organizations, and associations interested in the welfare of children.

2. Preparation and distribution of teaching materials, standards, administrative suggestions and special health information of a current nature.

- a. Four News Letters were prepared.

- b. Materials for local health committees were prepared and sent out.

- c. Several Mental Hygiene Bulletins have been prepared and distributed.

3. Cooperated with other division of the State Board of Health and the State Department of Public Instruction. A few examples are:

- a. Participated in the preparation of a School Lunchroom Guide.

- b. Participated in a Family Life Program.

- c. Worked with other groups on Standards of Sanitation.

- d. Worked with the State Education Commission.

- e. Prepared recommendations for the State Board of Education and State Board of Health to be used in preparing budget request.

- f. Participated in the Supervisors' Conference, the Superintendents' Conference, District and State Education Association Meetings, Public Health Meetings, and Staff Conferences of Health Education.

4. Worked cooperatively with the Conference of College and University Health

and Physical Education Personnel. This group was organized in May 1948 as a result of the efforts of the School-Health Coordinating Service to promote higher standards in institutions engaged in preparing teachers of health and physical education. Considerable progress is being made in: (a) Recruitment, selection and placement of teachers of health and physical education, and (b) Setting up suggested standards for teacher preparation in health physical education and recreation.

5. Visited schools to make surveys of needs and to make recommendations with respect to programs, building needs, personnel and facilities.

6. Assisted in workshops, institutes and conferences in city and county administrative units.

7. Conducted, upon requests, demonstrations particularly in screening procedures and physical education activities.

8. Intensive work in Northampton, Warren and Beaufort Counties have been carried on by the Negro nurse and health educator.

Health Education Workshop: A Health Education Workshop was sponsored by the School-Health Coordinating Service and the University of North Carolina at Chapel Hill from June 10 to July 20, 1948. The purpose of the Workshop was to provide opportunities for teachers, school administrators and health workers (1) to study the major health problems of children and adults; (2) to assist them in planning functional programs to meet the needs of their own particular school-community situations; and (3) to gain basic information and a mastery of skills and techniques essential to the best implementation of such programs.

Six semester hours of graduate or undergraduate credit was given by the University to those who completed the work.

Fifty-four scholarships in the amount of \$85.00 each were given to the participants.

Financial aid to provide scholarships, to employ consultants and to pay ex-

penses of others and for other expenses was given as indicated below:

The North Carolina Tuberculosis Association	\$ 750.00
Cleveland County Tuberculosis Association	100.00
Moore County Tuberculosis Association	50.00
North Carolina Division of the American Cancer Society--	750.00
State Board of Health	4590.00
	<hr/>
	\$6240.00

Mental Hygiene: The mental hygiene program, begun in 1947, has continued to receive wide acceptance. An in-service training program for teachers and administrators has been instituted on as extensive a basis as present limitations of personnel will permit. Programs for classroom instruction in human relations and for sex education have been initiated in several local school districts. In all of the mental health services cooperation has been extended to and received from community agencies whose functions of health education overlap similar functions in the schools or health departments.

Hearing Conservation: Audiometer testing of school children to detect early hearing defects has been greatly increased during the past year in spite of the loss of the special consultant. Twelve audiometers have been purchased locally and programs have been started by local personnel in these places.

BUREAU OF NUTRITION—W. P. Jaccobs, M. D., Director

The work of the Nutrition Division has developed favorably during the year. This has been due largely to the program which has been made in the program in the past three years and to an increase in staff. During the year, work was conducted through the health departments, institutions and schools in the following twenty-six counties:

Caswell, Rockingham, Guilford, Rutherford, Mecklenburg, Cabarrus, Anson, Scotland, Montgomery, Rowan, Surry, Alamance, Martin, Duplin, Pender, New

Hanover, Halifax, Cumberland, Gaston, Cherokee, Clay, Burke, Wayne, Wilson, Wake, Hoke.

The 1947 Legislature made it possible to offer higher salaries and as a consequence the staff has been increased. This is the first time since the Division was started that salaries somewhat comparable to those in other states could be offered. It is expected that this will assure a more stable staff. Negotiations are under way to employ six field consultants. This will make it possible to fill some of the requests for service that have had to be postponed because of too few consultants.

One candidate was granted a fellowship at Simmons College in September. She will join the staff on the completion of one year of study.

After three years as Director, Dr. W. P. Jacobs, resigned in September. He was succeeded at once by Dr. Bertlyn Bosley who was formerly, Principal Nutritionist, and who has returned to the work after a year as Professor of Nutrition at the Woman's College. Miss Jana Jones, was employed as Principal Nutritionist. She had served in a supervisory capacity in Tennessee for many years. Miss Sallie Mooring, the Consulting Dietitian, formerly Head Dietitian at Morganton State Hospital, has had many years of experience in her field. The addition of Miss Corbett makes it possible to place a consultant in the Western District office for the first time. Miss Mabel Todd resigned to accept a teaching position in West Virginia.

A new development this year was the employment in September, of a Consulting Dietitian, who will work with authorities of State and county institutions, hospitals, sanatoria and schools on the improvement of food service and kitchen management. The educational features of her work will be carried on jointly with the field consultants in each district. She is also cooperating with the Division of Sanitary Engineering in the review of the kitchen plans, with respect to their operational efficiency, for the Medical Care Commission.

During the summer two field consultants attended workshops, one at the University of North Carolina and one at Syracuse University.

A limited amount of consultation service has been given to managers of some industries. This has included surveys of food selection in mill owned cafeterias, conferences on improving food service and educational work.

Members of the staff prepared and published 7 magazine articles during the year.

Work With Nurses: The staff education program, planned jointly by the nurses and the nutritionists, has been continued. Nutrition conferences were held at regular quarterly intervals during the year with public health nurses throughout the State. The smallness of the staff, for the major part of the year, allowed only 43 such meetings in 1948 with a total attendance of 560 nurses. Among the subjects discussed at the meetings were the following: results of the surveys of the dietary patterns of school children in different sections of the State; methods of presenting nutrition information to various groups of people; nutrition during pregnancy; and newer developments in the field of nutrition.

Work With Teachers: The plan for giving special assistance to teachers upon request, has been described in previous reports. Eight hundred seventy-seven teachers from nine counties have voluntarily attended these courses during the year. Following the courses of instruction 601 teachers requested specific help in class room teaching and have conducted nutrition units with the children as a part of their health teaching. Some of these units included feeding experiments using rats and guinea pigs.

Consultants conducted nutrition classes at summer conferences for teachers held at the University of North Carolina and Appalachian State Teachers College.

Surveys: The plan of securing some information about the customary dietary pattern of a county by means of surveys has been continued. Before any

nutrition activities were begun in any county, three-day surveys were made of 9-11 year old children. The plan of surveys has already been described. During the year, 118 children were interviewed for diet histories in 5 schools. In general the surveys revealed that the consumption of meat and meat substitutes, and cereals was high. The consumption of milk, citrus fruits, tomatoes, green and yellow vegetables did not meet the minimum recommended allowances considered important for good growth and health of children.

Clinics: As usual the services of the nutritionists were available in local Health Department clinics when staff would permit. Group discussions and individual instruction were used in the pre-natal, well-baby, and preschool clinics. Other clinic patients were referred to the nutritionist by the doctor or nurse. Whenever possible, a simple demonstration of food preparation to illustrate a way of meeting some specific food needs was used in the group discussion. Twenty-six group discussions and 543 individual conferences were held in clinics during the year.

Arrangements were made for food and nutrition majors at the Woman's College, under the supervision of the district nutritionist, to assist in clinic demonstrations in Greensboro as a part of their course work. This cooperative plan has had the enthusiastic support of the college and has made possible an extension of work in Greensboro. This plan will be extended to other colleges.

DIVISION OF INDUSTRIAL HYGIENE—O. J. Swisher, Jr., Director

The primary responsibility of an industrial hygiene unit is the control of occupational diseases. Occupational diseases are those specific pathological conditions that result from the excessive exposure to toxic gases, vapors,

fumes or dusts, or from unusual intensities of physical energy such as ultra-violet light, X-ray, noise, or radio active emanations. Common and notorious examples of causes of occupational diseases are carbon monoxide gas, benzol vapor, lead fumes and free silica dust. Exposure to these causative agents is not necessarily limited to occupational activities, but the circumstances of prolonged exposure to concentrations that do not immediately produce dramatic physiological failures are characteristic of jobs at industrial processes that have toxic substances as ingredients, products, by-products, or waste products, or are accompanied by the use and production of high levels of hazardous forms of physical energy.

A casual impression of the frequency of occupational disease cases obtained from the number of cases encountered in general medical practice and even general hospital admission would be that these are rare indeed. But when the number of cases is properly related to the limited number of individuals actually exposed to toxic materials at their jobs, the risk assumes large proportions and requires that industrial hygiene be included among health department services. Effective preventive methods are known and are economical to apply in the vast majority of hazardous exposures, although the introduction of new processes and materials confronts the industrial hygienist with an unending series of new questions. Beyond these realistic facts that urgently recommend the prevention of occupational diseases, a matter or practical administrative interest to health officers at all levels is that the activities of the industrial hygienist can be made the path by which the broadening preventive medical services of health departments can be brought to the industrial and adult population.

Physical examinations and X-rays	3,197
Employees issued work cards	3,174
X-rays taken in non-dusty trades	776
Employees recommended to be removed from dusty trades	23
Employees recommended for further sanatorium study	9

Employees with tuberculosis	9
1 questionable tuberculosis	
1 bilateral moderately advanced tuberculosis with cavitation at right apex	
1 cavitation of left lung suggestive of tuberculosis	
1 advanced active tuberculosis	
1 far advanced active tuberculosis	
Employees with silicosis	14
2 first stage silicosis (early)	
7 second stage silicosis (moderate)	
5 third stage silicosis (advanced)	
Plants visited for examinations and X-ray of employees	34
Medical case histories submitted to the Industrial Commission	9
Supplementary medical case histories submitted to the Industrial Commission	17
Special physical examinations and X-rays as requested by the Industrial Commission	22
Diagnoses of the special examinations and X-rays:	
1 asbestosis, second stage	
1 first stage silicosis (early)	
6 second stage silicosis (moderate)	
4 third stage silicosis (advanced)	
1 emphysema	
1 far advanced tuberculosis	
8 E. N. (essentially negative)	
Court hearings attended	8
Conferences attended	27
(Weekly staff conferences attended in addition to above)	
Conventions attended	2

Future Activities of the Division of Industrial Hygiene:

1. There shall be no curtailment of the activities among the dusty trades as the Division must discharge this State-wide responsibility as its first obligation. Methods are being tried for increasing the completeness and speed of compliance with dust control recommendations.

2. Studies of occupational disease hazards in the furniture factories, and textile mills are needed and can be initiated this year if an additional person is added to the Engineering Section.

3. A closer contact with local health units shall be maintained by calls on the local health officer when person of the industrial hygiene unit are carrying on studies within the local jurisdiction.

4. An experimental area shall be sought in which the industrial hygiene unit will carry on occupational disease hazard surveys among all the industrial establishments of a single health unit,

and means developed for bringing together the activities of industrial hygiene and local public health units so that maximum of health improvement services can be brought to the adult working population.

5. There shall be an increase of consultant work from the Division to physicians and nurses in industry to better in-plant medical and nursing services. Such consultation is not limited to occupational disease problems, but extends to the promotion of new and improved plant medical services. These plant medical services offer a logical and proper point of liaison that the Division of Industrial Hygiene can open to the general services of local health departments, and other Divisions of the State health agency.

Engineering: At the beginning of this year the engineering section of this Division adopted what proved to be quite an ambitious program directed towards a more thorough investigation as

to extent of industrial health hazards in North Carolina. Even a casual comparison of the statistical report of activities for the year will reveal a gratifying increase in amount of services rendered industry over that of previous years. As in the past, it was necessary to sacrifice many services, normally rendered by an industrial hygiene unit, for obligations to the North Carolina Industrial Commission, i.e., supplying routine reports representing atmospheric dust concentrations being experienced by all employees exposed to hazards of asbestos and silica dust. In addition to fulfilling this obligation, investigations were made relative to environmental working conditions prevailing in such diversified industry as:

Battery manufacturing
Brass foundry
Dry cleaning
Cotton Textiles
Mirror manufacturing
Fertilizer manufacturing
Paper printing
Hosiery manufacturing

Found associated with these plants were employees exposures to such materials as cyanide, lead, zinc, nitrous oxide, sulphur dioxide, fluorides, ammonia, sulphur trioxide, acids, radioactive materials, formaldehyde, carbon monoxide, perchloroethylene, Stoddards solvent and trichloroethylene. From the statistical report given below it will be noted that these exposures were being experienced in a total of 202 plants employing 16,311 people. A total of 265 contaminated atmospheric samples were collected in the field, analyzed in our laboratory and hazards evaluated. Reports of these findings, along with recommendations for control of any established hazards, were furnished all parties concerned.

During the period covered by this report laboratory facilities were expanded to include X-ray diffraction with chemical and petrographic methods for identification of crystalline materials. With the installation of an X-ray diffraction unit this Division holds the distinction of being one of the very few health units in the country with facilities and

personnel capable of performing these three types of analyses.

Engineering Activities for year 1948

1. Field:

A. Plants visited	202
1. For routine inspection	73
2. For special Industrial Hygiene Surveys	129
a. Samples atmospheric contaminants collected	265
(1) Dust	180
(2) Other	85
3. Number workers involved	16,311

11. Laboratory:

A. Analyses	402
1. Dust	261
a. Particle count	261
b. Particle size	0
c. Petrographic and X-ray	27
2. Other contaminants	114

111. Miscellaneous:

A. Reports	129
1. Routine inspections	26
2. Special Industrial Hygiene Surveys	90
3. Monthly	12
Annual	1
B. Conferences and Meetings	9
C. Papers presented	1

BUREAU OF TUBERCULOSIS—William A. Smith, M. D., Director

1. The Tuberculosis Division in the State Board of Health emphasizes case findings and home follow-up and is one of the agencies in our State Government which has to do with tuberculosis control as a whole.

These agencies which are involved in tuberculosis control and under the control of the State Board of Health are:

- Division of Local Health Administration
- Division of Vital Statistics and Epidemiology
- State Laboratory of Hygiene, and
- Division of Tuberculosis Control

Other State agencies who are involved in the general tuberculosis program and not under the control of the State Board of Health are:

- Department of Public Instruction, which is concerned with Vocational Rehabilitation.
- State Board of Public Welfare,

which has to do with the protection of patients against economic distress by cooperation with County Welfare Agencies, and

c. The Sanatoria Board which controls the State Tuberculosis Sanatoria.

In this general setup the Division of Tuberculosis Control and the State Sanatoria are closely concerned with the problem of case finding; one agency being under control of the State Board of Health and the other under the control of the Sanatoria Board. The Tuberculosis Control Division operates mobile X-ray units in the field making the first contact with the patient, and the State Sanatoria interprets the final 14x17 film and renders to the Local Health Officer the diagnosis with recommendations as to further treatment. This information is transmitted in turn to the patient and to his physician.

The budget of the Tuberculosis Control Division is \$222,989 of which \$123,000 is allocated to district and county health departments for the purpose of local tuberculosis control; a portion of the remainder of the budget is allocated to those divisions in the State Board of Health who are directly concerned with tuberculosis control.

2. Personnel and Equipment: At the beginning of the period covered by this report the Division was operating 5 mobile X-ray units and also cooperated with Duke University Hospital in case finding through the installation of an X-ray unit in the receiving section of that hospital for the purpose of making chest plates on all persons who so desired.

At this time the Division has 7 mobile units, 2 generators, tractors and other necessary accessories as well as an additional X-ray unit which is to be installed in a trailer for field work. Personnel consists of 2 doctors, 2 health educators, 1 part-time consultant nurse, 7 senior X-ray technicians, 8 photo-fluorographic operators and trainees and 7 other personnel, or a total of 20 persons in the field, 6 persons in the Central Office and one clerk at the McCain Sanatorium. This clerk assists in the processing of records pertaining to

the follow-up activities conducted by the Sanatorium.

3. Activities: During the year mass county surveys were completed in counties named below:

Martin	Macon
Cumberland	Swain
New Hanover	Burke
Johnston	Caldwell
Duplin	McDowell
Haywood	Rutherford
Jackson	Polk

There were also 2 surveys in progress but not completed during 1948. These were Guilford and Rowan.

Four schools and colleges were surveyed by special request, and other schools are routinely surveyed if requested by local authorities during mass surveys of the county where such schools and colleges are located. Those colleges surveyed by special request were: N. C. State College, Raleigh; Meredith College, Raleigh; N. C. School for the Blind and Deaf, Raleigh and the Appalachian State Teachers College, Boone.

Seven special surveys in counties were carried out at the request of Local Health Officers. These surveys included chest X-ray of foodhandlers, industrial workers in both large and small industry, teachers, school children and other special groups. Counties in which such surveys were conducted were: Wake, Vance, Alleghany-Ashe-Watauga, Cherokee-Clay-Graham, Cleveland, Forsyth, and Davidson.

The number of films made in these locations varied from 1500 to 6000.

A total of 243,695 project films were made by the Division, of which 1614 or 0.66% showed definite tuberculosis and 1614 showed other chest pathology, or a total of 3,228 persons were discovered during the year who had some type of chest disease which required either advice or treatment by a physician.

Since the last report there has been a change in the method of follow-up activities. Instead of the units and personnel leaving the area shortly after the survey, one mobile unit with one technician and a clerk remains in the area for the purpose of completing all follow-

up X-ray work until released by the Local Health Officer.

4. Future Planning: Future planning in this Division consists of:

a. Stimulation of routine chest examinations of in-patients and out-patients in hospitals.

b. Establishing tuberculosis clinics at County Health Units when funds are available.

c. More X-rays of industrial groups.

d. Conducting itinerant clinics.

e. Continued study of methods of improving follow-up activities.

BUREAU OF CANCER CONTROL—
Ivan M. Procter, M. D., Director, Mildred W. S. Schram, Ph. D., Field Director.

On March 3, 1948, the Division of Cancer Control began an active program with Ivan Procter, M. D., Director, and Mildred Schram, Ph. D. Field Director.

Prior to this date a plan of State-wide Cancer Control, including the operation of Detection and Diagnostic-Management Clinics, had been prepared in detail, and approved by the State Health Officer, the State Board of Health, and the Cancer Committee of the North Carolina State Medical Society.

After the plan had been in operation for six months the progress was reported to the State Cancer Committee and the Executive Committee of the State Medical Society, both of whom approved the details of operation.

The first step in operation was the presentation of the control plan by the Director to the following County Medical Societies for their consideration: Wake, New Hanover, Buncombe, Forsyth, Mecklenburg, Guilford, Durham-Orange and Lenoir. In each instance the membership of the County Medical Society voted to approve the plan.

Orders for adequate equipment and instruments were placed with the State Department of Purchase and Contract.

Major Cancer Centers have been established and are in operation in New Hanover County at Wilmington; Buncombe County at Asheville; Forsyth

County at Winston-Salem. Harmony, cooperation, and efficiency has been an outstanding feature from the date of opening. There has been no gross error or major complaint reported at any time.

Detection Centers are operating with a staff of four physicians and four alternates. In a two-hour period, an average of thirty-two applicants are examined. A high percentage of the Diagnostic-Staff members are present together at each clinic session. During the period April 27 to December 31, 2,085 applicants were examined in the three Detection Centers. 665 were examined in the Diagnostic-Management Centers. 97 examinees were diagnosed cancer. 673 showed benign pathology. All applicants with benign pathology and cancer were referred to their personal physician for treatment.

Thirteen X-rays were made.

154 Biopsies were done.

An amendment to the Cancer Law has been passed by the General Assembly as follows:

"The General Assembly of North Carolina do enact:

Section 1. Subsections 1, and 2 of G. S. 130-285, as they appear in the 1947 Supplement to the General Statutes, are amended to read as follows:

"1. Meet the minimum requirements of the Division of Cancer Control, North Carolina State Board of Health.

"2. Each physician who shall staff such organization, board, or clinic, must be a diplomate of the American Board of the specialty of medicine of which he is engaged, or one who has been approved by his County Medical Society or its duly appointed representative, and the Division of Cancer Control, North Carolina State Board of Health.

Section 2. All laws and clauses of laws in conflict with this Act are hereby repealed.

Section 3. This Act shall be in full force and effect from and after its ratification."

A law requiring the reporting of suspicious and proven cancer cases has been passed by the General Assembly. A reporting card has been worked out

and approved, which corresponds with the U. S. Public Health classification, and can be used for comparison with other states.

Technicians have been trained in the Cytological Laboratory at Duke Hospital, and this feature can be placed in operation as soon as a qualified laboratory director is available.

PUBLIC HEALTH PUBLICITY — Mr. William H. Richardson, Publicity Specialist

The Senior Publicity Specialist, who is attached to the Division of Central Administration and works under the direct supervision of the State Health Officer, has reported the following major activities for the calendar year of 1948:

Fifty-two regular weekly broadcasts were made over Station WPTF, covering a wide range of Public Health subjects. A number of these broadcasts were devoted to infantile paralysis during the period of last year's epidemic. For a month or more, during the peak of polio incidence in North Carolina, the Publicity Specialist, at the request of Station WPTF, appeared daily to give the public official reports gathered by the Division of Epidemiology.

During the period covered by this report, the Publicity Specialist has prepared, edited and distributed various newspaper articles, including a number of special features. It might be stated in this connection that all material intended for publication is given not only to the newspaper but also to the various news gathering agencies such as the Associated Press and the United Press.

For the past year or so, news releases have also been cleared through the three Raleigh Radio Stations—WPTF, WRAL, and WNAO. These stations have proved to be effective mediums of publicity. The pen may be mightier than the sword, but the spoken word also has its potent place in the spreading of any message.

Following a precedent set about eleven years ago, our Publicity Specialist reported the proceedings of the State Medical Society, as it accredited repre-

sentative, at Pinehurst in 1948. He also aided in the March of Dimes Campaign and other movements to which Public Health gives its endorsement.

PERSONNEL ACTIVITIES — Isabelle Richardson, Personnel Officer

In 1948 many changes in the personnel of the State Board of Health and the local units occurred. At the same time progress has been made in the field of personnel administration on both levels.

At the State level 116 appointments were made, of which 52 were in professional classifications. Separations at the State level total 108, of which 45 were in professional classifications. In addition to the above personnel actions, 25 reclassifications, the majority of which carried salary increases, and 27 additional salary advancements were effected. As of December 31, 1948 there were 283 positions at the State Board of Health with 37 vacancies, of which 8 were medical and 7 were nursing vacancies.

In the local health departments 435 appointments were made while there were 443 separations including 50 leaves of absence for educational purposes. In addition 66 reclassifications were effected. Five new full-time health officers were appointed while six resigned. Six health officers transferred from one local department to another. As of December 31, 1948 there were 943 full-time positions in local health departments with 65 vacancies, of which 14 were health officers and 31 were nursing vacancies.

Nine new classifications and quite a number of revisions in minimum qualifications were prepared and adopted for use in local departments or at the State Board of Health.

A Compensation Plan for Local Health Departments was prepared, adopted and made effective on a permissive basis January 1, 1948, and on a mandatory basis July 1, 1948. Leave regulations for Local Health Units were approved to be effective January 1, 1948.

Personnel records of present employees and applicants have been reorganized and consolidated in the Personnel Office.

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FLUORIDE

in

NORTH CAROLINA

WATER

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The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
Chickenpox	Influenza	Tuberculosis
Diabetes	Malaria	Typhoid Fever
Diphtheria	Measles	Venereal Diseases
Don't Spit Placards	Padiculosis	Vitamins
Fly Placards	Pellagra	Typhoid Placards
Endemic Typhus	Residential Sewage	Water Supplies
Flies	Disposal Plants	Whooping Cough

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile Diarrhea.	Nine Months to One Year.
Breast Feeding.	One to Two Years.
Table of Heights and Weights.	Two to Six Years.
	Instructions for North Carolina Midwives.

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Fluoride in Surface Waters and Public Supplies of North Carolina

PART I

By

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During recent years, considerable interest has developed among health and water supply officials in connection with the possible advantages of adding fluoride to public water supplies as a means of preventing dental caries. The U. S. Public Health Service is at present cooperating with several cities throughout the country in conducting experiments to determine if the artificial application of fluoride to public water supplies will prove beneficial in reducing the incidence of dental caries. The first such project started was at Grand Rapids, Michigan, where experimental studies were begun January 25, 1945. This experiment was initiated with the knowledge that eight to twelve years would elapse before tangible evidence of the benefit of such treatment would be available; therefore, the fluoridation of public water supplies must be looked upon as still being in an experimental stage.

Request for information on the treatment of public water supplies with sodium fluoride has been received by the State Board of Health from several

municipalities during the past few years. The Board is, however, of the opinion that this treatment is still in an experimental stage and that municipalities might reasonably wait until the treatment has been demonstrated to be beneficial before starting the application of sodium fluoride to their water supply. As a policy, the State Board of Health will neither promote nor attempt to prevent towns from starting the treatment prior to a definite statement regarding the results of experimental studies now under way in several sections of the country. In the event, however, the treatment is initiated in any city, the State Board of Health will insist that it be carried on under the supervision of competent and well trained technical water plant operational personnel. The following policy regarding the fluoridation of public water supplies was adopted by the State Board of Health on December 16, 1943 and is included with this article for the information of the reader.

"Present information, as revealed in a recent symposium on fluorine in

drinking water, is that the presence of naturally occurring fluorides in drinking water, up to 1.5 parts per million, tends to inhibit dental caries. Experiments are now in progress, and some are nearing completion, to determine whether or not the addition of fluorine will reduce the incidence of dental caries and, at the same time, have no ill effects on other tissues and structures of the body.

"The State Board of Health takes the position that this is still in the experimental stage and does not care to go on record as unqualifiedly recommending its use. We call especial attention to the fact that there is a small margin of safety between 1.5 parts per million which may be beneficial and 2 parts per million which may cause mottling of the enamel of the teeth.

"If the officials of municipal or other water suppliers wish to fluorinate their water supplies, we do not oppose this step, provided that:

1. The city furnishes qualified tech-

nical personnel to supervise its application.

2. The proposed plan of the procedure of application and of the supervision of operation be submitted to the State Board of Health for approval before its application is begun.
3. Chemical analysis of both the raw and finished waters be made daily by a laboratory technician approved by the State Board of Health to insure that the fluorine content of the finished water does not exceed 1.5 parts per million as established in the U.S.P.H.S. drinking water standards.
4. The daily laboratory findings be submitted to the State Board of Health, monthly, with the regular water purification plant operation reports.

"We also suggest that municipalities contemplating this measure first secure the approval of their local dental and medical societies."

PART II

By

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Fluoride is rapidly gaining prominence because results of recent investigations have disclosed that varying amounts of fluoride affect dental health. Fluoride in water is known to be associated with the dental defect known as mottled enamel, if the water is used for drinking by young children during calcification or formation of teeth. Present investigation indicates that the incidence of dental caries-decay of teeth—is less when there are small amounts of fluoride present in the water supply than when there is none. Investigations have been made to determine the feasibility of adding fluoride to public water supplies. However,

before additions of fluoride are made, the fluoride content already present in water sources should be determined.

The U. S. Geological Survey in cooperation with the North Carolina Department of Conservation and Development and the State Board of Health is making a study of the chemical quality of surface waters and public water supplies in North Carolina as part of a comprehensive study of water resources of the State. The chemical data have appeared in various State and Federal reports. However, because of increasing interest in fluoride in natural waters, available information on the fluoride content in surface wa-

ters and public water supplies in North Carolina has been consolidated in this report.

Determination of fluoride was made by a modified zirconium-alizarin method.⁽¹⁾ The analyses of the public water supplies were made by the chemists of the U. S. Geological Survey cooperating with the North Carolina State Board of Health and the analyses of the stream samples were conducted under a similar program with the North Carolina Department of Conservation and Development.

The names and locations of streams and rivers which were investigated for chemical quality as part of the comprehensive program are listed alphabetically in Table I with their fluoride content. Streams and rivers where daily or monthly sampling stations have been established and operated during succeeding water years since 1943 are included, as well as miscellaneous sampling points where single samples were taken for chemical analysis. The column headed "Period" gives the date the sample was collected, or the year ended September 30 during which daily or monthly samples were collected. Daily samples were composited over a ten-day period and an analysis was

made of the composite, whereas the analysis of monthly samples represents the chemical quality of the water on the day of collection. The table is so arranged that for daily or monthly stations the maximum and minimum values are given for the year as well as the average. Where only a single analysis has been made the concentration of fluoride is given in the column for single analysis. Values for fluoride are reported in parts per million. A total number of 207 streams and rivers are included in the table.

The fluoride content in public water supplies of North Carolina is given in Table II. The towns and cities having public water supplies, the name of the county in which the municipality is located, and the source of the supply are given. The value for fluoride, in parts per million, of the water at the date sampled is given. In the last column reference is made as to whether the water has received any treatment. Two-hundred and sixty public water supplies are included.

(1)Lamar, W. L., Determination of fluoride in water; a modified zirconium-alizarin method: *Ind. Eng. Chem. Anal. Ed.* Vol. 17, pp. 148-149, 1945.

TABLE I — FLUORIDE IN SURFACE WATERS OF NORTH CAROLINA

(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			Single Analysis
		Max.	Min.	Av.	
Abbotts Creek at Lexington	8-12-44				.2
Abbotts Creek at Lexington	6-18-47				.1
Abbotts Creek at Lexington(1)	1947-48				
Aberdeen Creek at Aberdeen	5-25-45	.3	.1	.2	.0
Ahoskie Creek at Ahoskie	1-22-47				.0
Alarka Creek near Bryson City	4-24-47				.0
Alarka Creek near Bryson City	5-13-48				.1
Allen Creek near Hazelwood	3-28-47				.1
Ararat River at Mount Airy	7-29-46				.1
Armstrong Creek at Sevier	1-23-47				.1
Avery Creek near Avery Creek	4-19-48				.1
Ball Creek near Catawba	3-9-48				.1
Bear Creek at Robbins	10-30-44				.0
Bear Creek at Robbins	3-20-47				.0
Beaver Creek near Andrews	8-14-46				.1
Beetree Creek near Swannanoa	4-14-45				.0
Bent Creek at Bent Creek	4-19-48				.1
Big Coharie Creek near Ingold	3-22-47				.0
Big Laurel Creek near Stackhouse	5-9-45				.1
Big Laurel Creek near Stackhouse	4-20-48				.2
Big Pine Creek at Barnard	4-20-48				.2
Big Rockfish Creek near Hope Mills	11-9-44				.0
Big Rockfish Creek near Hope Mills	3-21-47				.0
Black Creek near Four Oaks	2-10-47				.0
Black River at Clear Run	3-21-47				.0
Black Mountain Reservoir at Black Mt.	3-2-45				.0
Bonnie Doone, Kornbou & Glenville Lakes at Fayetteville	4-28-48				.1
Boylston Creek near Horse Shoe	3-8-45				.1
Boylston Creek near Horse Shoe	4-19-48				.1
Bracket Creek at Forest City	6-30-44				.1
Brasstown Creek at Brasstown	3-7-47				.1
Broad River near Boiling Springs	11-10-44				.1

Broad River near Boiling Springs(1)	Cleveland County	1945-46	.2	.0	.1
Broad River near Chimney Rock	Rutherford County	11-11-44			.1
Broad River near Harris	Rutherford County	4-9-47			.1
Brown Creek near Polkton	Anson County	10-31-44			.0
Brown Creek near Polkton	Anson County	6-19-47			.1
Buffalo Creek near Greensboro	Guilford County	3-20-47			--
Burningtown Creek at Stiles	Macon County	5-13-48			.0
Camp Creek at Patrick	Cherokee County	6-22-48			.0
Cane Creek at Fletcher	Henderson County	12-4-43			.1
Cane Creek at Fletcher	Henderson County	8-9-45			.1
Cane Creek at Fletcher	Henderson County	4-19-48			.1
Cane Creek near Murphy	Cherokee County	6-22-48			.0
Cane River near Burnsville	Yancey County	2-27-47			.1
Cane River near Sioux	Yancey County	9-27-45			.0
Canoe Creek near Morganton	Burke County	3-9-48			.0
Cape Fear River near Fayetteville	Cumberland County	3-19-46			.1
Cape Fear River at Lillington	Harnett County	3-20-47			.2
Cape Fear River at Lillington(1)	Harnett County	1944-45	.3	.0	.1
Cape Fear River at Elizabethtown	Bladen County	3-21-47			.0
Cape Fear River at Lock 3, near Tarheel	Bladen County	11-4-44			.0
Cape Fear River at Lock 3,	Bladen County	1946-47	.5	.0	.2
near Tarheel (1)					
Cape Fear River at Wilmington	New Hanover County	3-27-47			.0
Cartoogechaye Creek near Franklin	Macon County	4-18-47			.0
Cartoogechaye Creek near Franklin	Macon County	5-18-48			.0
Cashie River at Windsor	Bertie County	7-22-47			.0
Cataloochee Creek near Cataloochee	Haywood County	4-2-45			.0
Catawba River near Belmont	Gaston County	10-20-45			.0
Catawba River near Belmont	Gaston County	3-10-48			.1
Catawba Creek near Cramerton	Gaston County	3-10-48			.3
Catawba River at Catawba(1)	Catawba County	1945-46	.2	.0	.1
Catawba River at Catawba	Catawba County	3-9-48			.0
Catawba River near Marion	McDowell County	11-13-44			.1
Catawba River near Marion(1)	McDowell County	1945-46	.2	.0	.1
Catawba River near Marion	McDowell County	3-8-48			.0
Catawba River near Marion	McDowell County	3-8-48			.2
Catawba River at Morganton	McDowell County	9-21-48			.0
Catawba River at Morganton	Burke County	4-12-46			.0

(1) Daily sampling station operated during period shown.

Table I — Fluoride in Surface Waters of North Carolina — Continued
(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			Single Analysis
		Max.	Min.	Average	
Catawba River at Old Fort	3-8-48				.1
Catawba River at Rhodhiss	9-14-45				.0
Cathays Creek near Brevard	3-8-45				.1
Cathays Creek near Brevard(2)	1946-47	.2		.1	
Chatuge Reservoir near Hayesville	6-22-48		.0		.0
Cheoah River at Tapoco	2-24-47				.1
Cheoah River at Tapoco	5-14-48				.1
Chockyott Creek at Weldon	7-22-47				.0
Chowan River at Colerain	1-22-47				.0
Chowan River near Edenton	3-19-46				.0
Chowan River at Winton	1-22-47				.0
Clear Creek near Hendersonville	9-26-45				.0
Contentnea Creek at Hookerton	10-26-44				.0
Contentnea Creek at Hookerton	2-11-47				.5
Contentnea Creek at Hookerton	3-18-48				.2
Contentnea Creek near Wilson	11-17-44				.0
Contentnea Creek near Wilson	2-10-47				.0
Cove Creek near Sugar Grove	3-11-47				.1
Crab Creek near Penrose	3-9-45				.1
Crab Creek near Penrose	4-19-48				.1
Crabtree Creek near Raleigh	2-10-47				.1
Crane Creek at Violet	6-22-48				.1
Crystal Lake at Lakeview	4-5-45				.0
Cullasaja Creek at Cullasaja	7-3-46				.0
Cullasaja Creek at Cullasaja	5-13-48				.0
Cullasaja Creek at Highlands	7-3-46				.1
Dan River near Francisco	8-11-44				.0
Dan River near Francisco	7-21-47				.1
Dan River at Leaksville	8-9-44			.1	
Dan River at Leaksville(1)	1944-45				.1
Dan River at Leaksville	7-21-47				.1
Dan River at Leaksville	8-17-48				.1
Dan River at Pine Hall	4-4-46	.2	.0	.1	.1

Dan River near Walnut Cove	Stokes County	2-28-47	.2
Dan River near Wentworth	Rockingham County	10-23-44	.0
Davidson Creek near Cornelius	Mecklenburg County	3-9-48	.2
Davidson River near Brevard	Transylvania County	3-9-45	.1
Davidson River near Brevard	Transylvania County	4-19-48	.1
Deep Creek at Bryson City	Swain County	4-17-47	.0
Deep River at Moncure(1)	Chatham County	1943-44	.1
Deep River at Moncure	Chatham County	3-20-47	.0
Deep River at Ramseur	Randolph County	11-2-44	.1
Deep River at Ramseur(1)	Randolph County	1946-47	.3
Deep River near Randleman	Randolph County	8-12-44	.0
Deep River near Randleman	Randolph County	3-20-47	.0
Deep River at Worthville	Randolph County	7-12-46	.1
Denson Creek near Troy	Montgomery County	1-3-45	.0
Dial Creek near Bahama	Durham County	8-7-46	.1
Dial Creek near Bahama	Durham County	2-10-47	.1
Drowning Creek near Hoffman	Richmond County	10-30-44	.0
Drowning Creek near Hoffman(1)	Richmond County	1946-47	.1
Drowning Creek near Rhodhiss	Caldwell County	3-9-48	.1
Dutch Buffalo Creek at Mount Pleasant	Watauga County	2-26-47	.1
Dutchmans Creek near Mocksville	Cabarrus County	6-18-47	.1
Dutchmans Creek at Mount Holly	Davie County	6-17-47	.2
E. Fork of Deep River near High Point	Gaston County	3-10-48	.0
E. Fork of Deep River near High Point	Guilford County	8-12-44	.1
E. Fork Tuckasegee River at Tuckasegee	Guilford County	3-20-47	.0
Elk Creek near Elk Park	Jackson County	4-9-47	.0
Elk Shoals near Paynes Store	Avery County	9-26-45	.1
Eno River near Gorman	Alexander County	3-9-48	.1
Eno River at Hillsboro	Durham County	2-10-47	.1
Eno River at Hillsboro	Orange County	9-26-44	.1
Fires Creek near Hayesville	Orange County	2-10-47	.1
First Broad River near Lawndale	Clay County	6-22-43	.0
Fisher River near Copeland	Cleveland County	11-10-44	.1
Fisher River near Copeland	Surry County	8-11-44	.0
Fisher River near Copeland(2)	Surry County	6-18-47	.1
	Surry County	1947-48	.1
			.0

(1) Daily sampling station operated during period shown.

(2) Monthly sampling station operated during period shown.

Table I — Fluoride in Surface Waters of North Carolina — Continued
(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			Single Analysis
		Max.	Min.	Av.	
Fishing Creek near Enfield	7-11-44				.0
Fishing Creek near Enfield	1-6-47				.2
Fishing Creek near Lawrence	1-6-47				.4
Fishing Creek near Wood	1-7-47				.2
Flat Creek near Black Mountain	12-6-43				.0
Flat River at Bahama	8-7-46				.1
Flat River at Bahama	2-10-47				.1
Flat River at dam, near Bahama	9-16-46				.1
Flat River at dam, near Bahama	2-10-47				.0
Floyds Creek at Harris	4-9-47				.1
Fontana Reservoir at Fontana Dam	5-14-48				.1
Forbush Creek near Yadkinville	8-11-44				.0
French Broad River at Asheville	11-30-43				.0
French Broad River at Asheville	8-9-45				.0
French Broad River at Asheville	4-19-48				.2
French Broad River at Bent Creek	8-9-45				.0
French Broad River at Bent Creek	4-19-48				.1
French Broad River at Blantyre	3-9-45				.0
French Broad River at Blantyre	4-19-48				.1
French Broad River at Calvert	3-8-45				.1
French Broad River at Calvert	4-19-48				.2
French Broad River at Horse Shoe	4-19-48				.0
French Broad River at Hot Springs	5-8-45				.0
French Broad River at Hot Springs (1)	1945-46	.2	.0	.1	.2
French Broad River at Hot Springs	4-20-48				.1
French Broad River at Marshall	5-7-45				.1
French Broad River at Marshall	4-20-48				.1
French Broad River at Rosman	3-8-45				.1
French Broad River at Rosman (1)	1945-46	.2	.0	.1	.1
French Broad River at Rosman	4-19-48				.1
Glenville Lake near Glenville	5-13-48				.1
Green River near Mill Spring	11-11-44				.1
Gum Swamp Creek near Laurinburg	5-14-47				.0

Hanging Dog Creek near Murphy	Cherokee County	6-22-48	.1
Haw River near Benaja	Rockingham County	8-19-46	.2
Haw River near Benaja	Rockingham County	3-20-47	.1
Haw River at Haw River	Alamance County	9-26-44	.3
Haw River at Haw River	Alamance County	3-20-47	.1
Haw River near Moncure	Chatham County	10-11-45	.3
Haw River near Pittsboro	Chatham County	10-19-44	.3
Haw River near Pittsboro	Chatham County	3-20-47	.3
Hazel Creek at Proctor	Swain County	7-26-46	.0
Hazel Creek at Proctor	Swain County	5-14-48	.1
Henry Fork near Henry River	Burke County	8-6-46	.1
Henry Fork near Henry River	Burke County	3-9-48	.1
Henry Fork impounded near Morganton	Burke County	4-29-46	.0
Hiwassee Reservoir at Hiwassee Dam	Cherokee County	6-22-48	.0
Hiwassee River at Chatuge Dam, near Hayesville	Clay County	7-10-46	.0
Hiwassee River below Chatuge Dam, near Hayesville(2)	Clay County	1946-47	.2
Hiwassee River below Chatuge Dam, near Hayesville	Clay County	6-22-48	.0
Hiwassee River above Murphy	Cherokee County	7-8-46	.0
Hiwassee River above Murphy(2)	Cherokee County	1946-47	.1
Hiwassee River above Murphy	Cherokee County	6-22-48	.3
Hominy Creek at Candler	Buncombe County	8-9-45	.1
Hominy Creek at Candler	Buncombe County	4-19-48	.2
Horsepen Creek at Battle Ground	Guilford County	8-12-44	.1
Horsepen Creek at Battle Ground	Guilford County	3-20-47	.1
Howard Creek at Lincolnton	Lincoln County	2-5-46	.0
Hunter Creek near Marshall	Madison County	9-10-46	.1
Hunting Creek near Mocksville	David County	6-17-47	.0
Ivy River near Marshall	Madison County	5-9-45	.1
Ivy River near Marshall	Madison County	4-20-48	.2
Johns River near Chesterfield	Burke County	3-9-48	.1
Johns River at Collettsville	Caldwell County	12-12-43	.0
Jonathan Creek near Cove Creek	Haywood County	4-2-45	.0
Kings Creek near Brevard	Transylvania County	8-12-46	.1

(1) Daily sampling station operated during period shown.

(2) Monthly sampling station operated during period shown.

Table I — Fluoride in Surface Waters of North Carolina — Continued
(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			
		Max.	Min.	Av.	Single Analysis
Lands Creek near Bryson City	9-12-46				.1
Linville River at Branch	11-13-44				.1
Linville River at Branch	3-9-48				.1
Little River at Lakeview	8-31-48				.2
Little River near Penrose	3-9-45				.1
Little River near Penrose	4-19-48				.1
Little River near Princetown	7-14-44				.0
Little River near Princetown	Johnston County				.3
Little River near Steeds	2-10-47				.2
Little River near Troy	8-20-46				.0
Little River near Troy	1-3-45				.2
Little River at Vass	6-18-47				.0
Little Brasstown Creek at Brasstown	8-30-48				.1
Little Coharie Creek near Ingold	6-22-48				.0
Little Contentnea Creek near Ayden	3-22-47				.3
Little Rockfish Creek near Hope Mills	2-11-47				.0
Little Rockfish Creek near Hope Mills	11-9-44				.1
Little Sugar Creek near Charlotte	3-21-47				.4
Little Tennessee River near Fontana	8-11-46				.0
Little Tennessee River near Fontana	7-26-46				.2
Little Tennessee River at Needmore	5-14-48				.1
Little Tennessee River at Needmore	7-25-46				.1
Little Tennessee River at Norton	5-13-48				.0
Little Tennessee River near Prentiss	7-3-46				.0
Little Tennessee River near Prentiss	5-13-48				.0
Lockwood Folly River at Supply	5-14-47				.2
Long Creek near Mount Holly	3-10-48				.1
Long Creek at Spencer Mountain	3-10-48				.1
Lower Little River at Linden	7-4-45				.0
Lower Little River at Linden (1)	11-10-44				.0
Lower Little River at Manchester	1946-47	.2	.0	.1	.0
Lower Little River at Manchester	8-5-46				.0
Lower Little River at Manchester	3-20-47				.0

Lower Little River at Millersville	Alexander County	3-9-48	.0	
Lower Little River near Taylorsville	Alexander County	3-2-47	.0	
Lumber River at Boardman	Columbus County	11-3-44		
Lumber River at Boardman(1)	Columbus County	1946-47	.2	.0
Lumber River at Boardman	Columbus County	9-29-48		
Lumber River near Lumberton	Robeson County	5-14-46		
Lumber River near Lumberton	Robeson County	5-14-47		
Lyle Creek at Catawba	Catawba County	3-9-48		
McDowells Creek near Lucia	Mecklenburg County	3-9-48	.3	
Mackeys Creek (at highway bridge)	Washington County	6-29-44		
Mackeys Creek (at highway bridge)	Washington County	6-29-44		
Mackeys Creek (at highway bridge)	Washington County	12-12-44		
Mackeys Creek (at highway bridge)	Washington County	12-12-44		
Mackeys Creek (at highway bridge)	Washington County	12-12-44		
Mackeys Creek (at highway bridge)	Washington County	12-12-44		
Marble Creek impounded near Murphy	Cherokee County	7-15-46	.1	
Martin Creek at Murphy	Cherokee County	6-22-48	.1	
Mayo River near Price	Rockingham County	8-10-44	.1	
Mayo River at Stoneville	Rockingham County	7-21-47	.2	
Meherrin River near Margarettsville	Northampton County	1-22-47	.0	
Meherrin River at Murfreesboro	Hertford County	1-22-47	.0	
Meherrin River near Severn	Northampton County	1-22-47	.0	
Middle Creek near Clayton	Johnston County	9-1-44	.0	
Middle Creek near Clayton	Johnston County	2-10-47	.1	
Middle Creek at Otto	Macon County	5-13-48	.1	
Middle Little River near Millersville	Alexander County	3-9-48	.1	
Mill Creek at Old Fort	McDowell County	12-5-43	.0	
Mills River near Mills River	Henderson County	3-8-45	.1	
Mills River at Mills River(2)	Henderson County	1946-47	.3	.1
Mills River at Mills River	Henderson County	4-19-48		
Mitchell River near Elkin	Surry County	6-18-47	.1	
Mountain Creek near Terrell	Catawba County	3-9-48	.1	
Mud Creek at Naples	Henderson County	8-9-45	.1	
Mud Creek at Naples	Henderson County	4-19-48	.1	

(1) Daily sampling station operated during period shown.

(2) Monthly sampling station operated during period shown.

Table I — Fluoride in Surface Waters of North Carolina — Continued
(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			Single Analysis
		Max.	Min.	Av.	
Muddy Creek near Winston-Salem	6-18-47				.1
Nantahala River at Nantahala	7-8-46				.0
Nantahala River near Rainbow Springs	7-10-46				.0
Nantahalla River at Wesser	5-14-48				.1
Newfound Creek near Alexander	4-20-48				.1
Neuse River near Clayton(1)	1943-44	.1	.0	.1	
Neuse River near Clayton	2-10-47				.1
Neuse River near Goldsboro	7-13-44				.0
Neuse River near Goldsboro	2-10-47				.1
Neuse River at Kinston	7-13-44				.0
Neuse River at Kinston	2-11-47				.2
Neuse River near Milburnic	3-21-46				.0
Neuse River at New Bern	2-11-47				.2
Neuse River near Northside	10-23-44				.0
Neuse River near Northside	2-10-47				.1
Neuse River near Selma	3-29-46				.1
New Hope River near Merry Oaks	3-20-47				.1
Noland Creek near Bryson City	7-15-46				.0
Noland Creek near Bryson City	5-13-48				.2
Nolichucky River at Poplar	9-27-45				.0
North Buffalo Creek near Greensboro	10-23-44				.0
North Buffalo Creek near Greensboro	3-20-47				.2
Northeast Cape Fear River near Castle Hayne	3-21-47				.1
Northeast Cape Fear River near Chinquapin	8-8-46				.0
Northeast Cape Fear River near Chinquapin	3-21-47				.0
North Fork Catawba River at Sevier	1-23-47				.1
North Fork Mills River near Mills River	2-25-47				.2
North Fork New River at Crumpler	5-12-45				.1
North Fork Swannanoa near Black Mountain	4-14-45				.0

North Fork Swannanoa near Black Mountain	Buncombe County	4-19-48			.1
North Toe River at Altapass	Mitchell County	5-14-45			.0
North Toe River at Spruce Pine	Mitchell County	12-3-43			.0
Nottely River at Ranger	Cherokee County	6-22-48			.1
Oconalufy River at Birdtown	Swain County	8-7-45			.0
Oconalufy River at Cherokee	Swain County	8-17-45			.0
Oconalufy River at Cherokee(1)	Swain County	1945-46	.2	.0	.1
Oconalufy River at Cherokee	Swain County	5-13-48			.0
Paw Creek near Morris Field	Mecklenburg County	3-10-48			.3
Peachtree Creek near Brasstown	Clay County	6-22-48			.0
Pee Dee River near Albemarle	Stanly County	6-18-47			.1
Pee Dee River impounded in Lake Tillery (west side), at Hydro	Stanly County	3-19-46			.1
Pee Dee River impounded in Lake Tillery (east side), at Hydro	Montgomery County	3-19-46			.1
Pee Dee River below dam, at Hydro	Montgomery County	3-8-46			.0
Pee Dee River near Rockingham	Richmond County	10-30-44			.1
Pee Dee River near Rockingham(1)	Richmond County	1946-47	.2	.0	.1
Pee Dee River near Rockingham(1)	Richmond County	1947-48	.3	.0	.2
Pee Dee River near Wadesboro	Anson County	6-17-47			.2
Persimmon Creek near Ranger	Cherokee County	8-4-48			.1
Pigeon River at Canton	Haywood County	4-14-45			.0
Pigeon River near Hepco	Haywood County	4-2-45			.1
Piney Creek impounded at Montreat	Buncombe County	8-26-46			.1
Plott Creek near Hazelwood	Haywood County	5-24-44			.0
Potocasi Creek near Winton	Hertford County	1-22-47			.0
Potocasi Creek near Woodland	Northampton County	1-22-47			.0
Ramsey Creek at Jackson	Northampton County	1-22-47			.0
Rays Mill Creek at Aberdeen	Moore County	5-22-45			.0
Reddies River at North Wilkesboro	Wilkes County	8-6-46			.1
Reddies River at North Wilkesboro	Wilkes County	6-17-47			.1
Reddies River at North Wilkesboro(2)	Wilkes County	1947-48			.1
Reedy Fork near Gibsonville	Guilford County	10-23-44	.3	.0	.1
Reedy Fork near Gibsonville	Guilford County	3-20-47			.1
Reems Creek near Alexander	Buncombe County	4-20-48			.1

(1) Daily sampling station operated during period shown.

(2) Monthly sampling station operated during period shown.

Table I — Fluoride in Surface Waters of North Carolina — Continued
(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			
		Max.	Min.	Av.	Single Analysis
Reems Creek at Weaverville	Buncombe County	12-4-43			.1
Reems Creek at Weaverville	Buncombe County	5-7-45			.0
Reems Creek near Weaverville	Buncombe County	2-25-47			.2
Reems Creek at Woodfin	Buncombe County	10-9-46			.1
Richardson Creek near Marshville	Union County	6-19-47			.2
Richland Creek at Waynesville	Haywood County	5-24-44			.0
Richland Creek at Waynesville	Haywood County	4-2-45			.1
Richland Creek at Lake Junaluska	Haywood County	3-28-47			.1
Roanoke River above Plymouth	Washington County	3-19-46			.2
Roanoke River below Plymouth	Washington County	4-10-46			.1
Roanoke River at Roanoke Rapids	Halifax County	1-7-46			.0
Roanoke River at Roanoke Rapids	Halifax County	7-22-47			.2
Roanoke River near Scotland Neck(1)	Halifax County	1944-45	.0	.1	.2
Roanoke River near Scotland Neck	Halifax County	7-22-47			.2
Roanoke River at Weldon	Halifax County	7-22-47			.2
Roanoke River at Williamston	Martin County	7-22-47			.2
Roaring River at Roaring River	Wilkes County	6-17-47			.0
Rockfish Creek at Lakefield	Hoke County	5-22-45			.0
Rock Fish Creek near Wallace	Duplin County	3-21-47			.0
Rocky River near Concord	Cabarrus County	6-18-47			.2
Rocky River near Locust	Cabarrus County	6-19-47			.2
Rocky River near Norwood	Stanly County	10-31-44			.0
Rocky River near Norwood(1)	Stanly County	1947-48	.1	.2	.3
Rocky River near Pittsboro	Chatham County	3-20-47			.0
Rocky River (directly tributary to South Yadkin River) at Turnersburg	Iredell County	8-11-44			.0
Sandymush Creek near Alexander	Buncombe County	5-7-45			.1
Santeeelah Reservoir near Robbinsville	Graham County	5-14-48			.2
Scott Creek above Sylva	Jackson County	8-6-45			.1
Second Creek near Salisbury	Rowan County	6-17-47			.1
Second Broad River at Cliffside	Rutherford County	11-11-44			.1
Second Broad River near Forest City	Rutherford County	6-14-44			.1
Second Broad River near Forest City	Rutherford County	6-21-44			.0

Second Broad River near Forest City	Rutherford County	1-30-47	.3
Shallotte River at Shallotte	Brunswick County	5-14-47	.0
Shoal Creek near vests	Cherokee County	6-22-48	.1
Shoe Heel Creek near Maxton	Robeson County	5-14-47	.0
Shooting Creek near Hayesville	Clay County	6-22-48	.1
Silver Creek near Morganton	Burke County	3-9-48	.1
Six Runs near Delway	Sampson County	3-22-47	.0
Smith River at Spray	Rockingham County	8-9-44	.0
Smith River at Spray	Rockingham County	7-21-47	.1
Smith River at Spray	Rockingham County	8-17-48	.1
Snowbird Creek near Robbinsville	Graham County	7-26-46	.2
Snowbird Creek near Robbinsville	Graham County	5-14-48	.0
Soco Creek at Cherokee	Swain County	4-10-47	.0
South River near Tomahawk	Sampson County	3-21-47	.0
South Deep Creek near Yadinville	Yadin County	6-18-48	.0
S. Fork Catawba River at Cramerton	Gaston County	3-10-48	.1
S. Fork Catawba River at Lincolnton	Lincoln County	2-5-46	.1
South Fork Catawba River at Lowell	Gaston County	11-10-44	.1
South Fork Catawba River at Lowell	Gaston County	3-10-48	.1
South Fork Catawba River near Maiden	Catawba County	3-9-48	.1
S. Fork Catawba River at Spencer Mt.	Gaston County	10-20-45	.1
S. Fork Mills River at the Pink Beds	Transylvania County	3-9-45	.1
South Fork New River near Jefferson	Ashe County	5-3-45	.0
South Fork New River near Jefferson	Ashe County	8-30-48	.1
South Toe River at Newdale	Yancey County	5-14-45	.0
South Yadin River at Cooleemee	Davie County	8-12-44	.0
South Yadin River at Cooleemee (1)	Davie County	1947-48	.1
South Yadin River near Mocksville	Davie County	8-12-44	.1
South Yadin River near Mocksville	Davie County	6-17-47	.1
Spring Creek at Hot Springs	Madison County	12-4-43	.1
Spring Creek at Hot Springs	Madison County	5-8-45	.1
Spring Creek at Hot Springs	Madison County	2-25-47	.3
Spring Creek at Hot Springs	Madison County	4-20-48	.2
Stanley Creek near Stanley	Gaston County	3-10-48	.1
Stoney Creek at Burlington	Alamance County	3-30-48	.2
Swannanoa River at Biltmore	Buncombe County	4-14-45	.0
Swannanoa River at Biltmore	Buncombe County	4-19-48	.1

.2 .0 .1

(1) Daily sampling station operated during period shown.

Table I — Fluoride in Surface Waters of North Carolina — Continued
(Parts per million)

NAME AND LOCATION OF STREAM	PERIOD	FLUORIDE			Single Analysis
		Max.	Min.	Av.	
Swift Creek near Smithfield	2-10-47				.1
Swift Creek near Vanceboro	2-11-47				.3
Tar River at Greenville	7-13-44				.0
Tar River at Greenville	1-6-47				.4
Tar River at Greenville	9-15-48				.2
Tar River at Grimesland	3-19-46				.0
Tar River at Louisburg	1-6-47				.2
Tar River at Nashville	7-12-44				.0
Tar River at Rocky Mount	1-6-47				.5
Tar River at Spring Hope	1-6-47				.5
Tar River near Tar River	7-10-44				.1
Tar River near Tar River	1-6-47				.3
Tar River at Tarboro	7-12-44				.0
Tar River at Tarboro(1)	1944-45	.1	.0	.0	.0
Tar River at Tarboro	1-6-47				.4
Tar River at Washington	1-6-47				.4
Tessentee Creek at Otto	1-6-47				.0
Third Creek at Cleveland	5-13-48				.1
Tranters Creek near Washington	8-11-44				.0
Tranters Creek near Washington	2-8-46				.0
Tranters Creek above Washington	4-7-47				.1
Trent River at Pollokville	4-7-47				.1
Tuckasegee River at Bryson City	2-11-47				.0
Tuckasegee River at Bryson City	8-7-45				.0
Tuckasegee River at Dillsboro	5-13-48				.1
Tuckasegee River Tuckasegee	8-6-45				.0
Tusquitee Creek near Hayesville	8-6-45				.0
Tusquitee Creek near Hayesville	3-7-47				.0
Tulula Creek at Robbinsville	6-22-48				.0
Twentymile Creek near Fontana	3-24-47				.1
Upper Little River near Lillington	2-24-47				.1
Uwharrie River near Asheboro	3-20-47				.0
Uwharrie River near Eldorado	6-17-47				.1
	10-31-44				.0

Uwharrie River near Eldorado	Montgomery County	6-18-47			.1
Uwharrie River near Eldorado (2)	Montgomery County	1947-48		.0	
Valley River at Andrews	Cherokee County	3-7-47			.2
Valley River at Andrews	Cherokee County	6-22-48			.0
Valley River at Tomotla	Cherokee County	7-8-46			.1
Valley River at Tomotla	Cherokee County	6-22-48			.1
Waccamaw River at Freeland	Brunswick County	11-2-44			--
Waccamaw River at Freeland	Brunswick County	5-14-47			.0
Warrior Fork near Oak Hill	Burke County	3-9-48			.1
Watauga River near Sugar Grove	Watauga County	9-26-45			.1
W. Fork of Deep River near High Point	Guilford County	8-12-44			.1
W. Fork of Deep River near High Point	Guilford County	3-20-47			.5
W. Fk. Tuckasegee River at Tuckasegee	Jackson County	4-9-47			.0
Wiccacon River near Harrelsville	Hertford County	1-22-47			.0
Winklers Creek near Boone	Watauga County	8-6-46			.1
Yadkin River impounded in Idols Lake near Clemmons	Forsyth County	3-1-47			.1
Yadkin River impounded in Idols Lake near Clemmons	Forsyth County	3-7-47			.0
Yadkin River at Donnaha	Forsyth County	4-17-46			.1
Yadkin River at Elkin	Surry County	6-17-47			.1
Yadkin River at High Rock	Davidson County	8-11-44			.0
Yadkin River at High Rock (1)	Davidson County	1947-48	.3	.0	.1
Yadkin River at Patterson	Caldwell County	11-13-44			
Yadkin River at Patterson (2)	Caldwell County	1947-48	.3	.0	.1
Yadkin River near Spencer	Rowan County	6-17-47			.2
Yadkin River at Wilkesboro	Wilkes County	8-5-46			.0
Yadkin River at Wilkesboro	Wilkes County	6-17-47			.1
Yadkin River at Wilkesboro (1)	Wilkes County	1947-48	.2	.0	.1
Yadkin River near Winston-Salem	Forsyth County	6-18-47			.1
Yadkin River at Yadkin College (1)	Davidson County	1943-44	.1	.0	.1
Yadkin River at Yadkin College	Davidson County	6-17-47			.1
Yadkin River at Yadkin College	Davidson County	9-15-48			.1
Yellowhammer Creek at Tapoco	Graham County	9-25-46			.1

(1) Daily sampling station operated during period shown.

(2) Monthly sampling station operated during period shown.

TABLE II — FLUORIDE IN PUBLIC WATER SUPPLIES OF NORTH CAROLINA
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Aberdeen, N. C. Ahoskie, N. C.	Moore County Hertford County	Spring	.1	4-21-47	Treated
		Well No. 1	.4	5-25-48	Untreated
Albemarle, N. C. Alexander Mills, N. C.	Stanly County Rutherford County	Well No. 2	.5	5-25-48	Treated
		Long Creek impounded	.1	8-8-46	Untreated
		Well No. 1	.1	5-23-48	Untreated
		Well No. 2	.1	5-25-48	Untreated
		Well No. 3	.1	5-25-48	Untreated
Andrews, N. C. Apex, N. C.	Cherokee County Wake County	Beaver Creek	.1	8-14-46	Treated
		Impounding reservoir on 2 streams	.0	5-10-45	Treated
Asheboro, N. C. Asheville, N. C. Aulander, N. C. Ayden, N. C.	Randolph County Buncombe County Bertie County Pitt County	Lake No. 1	.0	2-11-46	Treated
		N. Fork & Beetree Creek	.0	5-1-44	Treated
		Well No. 1	.2	3-18-47	Untreated
		Well No. 1	.1	2-9-48	Untreated
		Well No. 2	.1	2-9-48	Untreated
Badin, N. C. Bailey, N. C.	Stanly County Nash County	Yadkin River impounded	.0	5-28-46	Treated
		Well No. 1	.1	7-22-48	Untreated
		Well No. 2	.1	7-22-48	Untreated
		Well No. 3	.1	7-22-48	Untreated
		Spring	.1	1-31-47	Untreated
Bakersville, N. C. Banner Elk, N. C.	Mitchell County Avery County	Well No. 1	.0	6-24-48	Untreated
		Well No. 2	.0	6-24-48	Untreated
		Well No. 3	.1	8-30-48	Untreated
		Springs impounded	.1	11-12-46	Untreated
		2 wells (No. 1 & 2)	.6	4-3-47	Treated
Bat Cave, N. C. Beaufort, N. C. Belhaven, N. C.	Henderson County Currier County Beaufort County	Well No. 1	.5	11-10-47	Untreated
		Well No. 2	.5	11-10-47	Untreated
		Well No. 3	.5	11-10-47	Untreated
		Well No. 4	1.0	11-10-47	Untreated
		Catawba River	.1	3-8-46	Treated
Belmont, N. C. Benson, N. C. Bessemer City, N. C. Bethel, N. C.	Gaston County Johnston County Gaston County Pitt County	Well No. 1	.2	5-16-47	Untreated
		Long Creek impounded	.0	6-10-46	Treated
		Well No. 1	1.3	4-28-47	Untreated

Biscoe, N. C.	Montgomery County	Well No. 1	.1	3-10-48	Untreated
		Well No. 2	.1	3-10-48	Untreated
		Well No. 3	.2	3-10-48	Untreated
			.0	3-2-45	Untreated
Black Mountain, N. C.	Buncombe County	Black Mountain Reservoir impounding mountain streams			
Blowing Rock, N. C. (Cone Estate)	Watauga County	Small streams at foot of Flat Top Mountain	.1	9-20-46	Treated
Bladenboro, N. C.	Bladen County	Well No. 1	.4	6-23-47	Untreated
Boiling Springs, N. C.	Cleveland County	Well No. 2	.2	9-16-47	Untreated
		Well No. 3	.2	9-16-47	Untreated
Boonville, N. C.	Yadkin County	Well	.2	3-15-47	Untreated
Brevard, N. C.	Transylvania County	Kings Creek	.1	8-12-46	Treated
Brunswick, N. C.	Columbus County	Well No. 1	.1	6-8-48	Untreated
Bryson City, N. C.	Swain County	Lands Creek	.1	9-12-46	Treated
Burgaw, N. C.	Pender County	Well No. 1	.8	7-6-48	Untreated
		Well No. 1	.9	7-6-48	Treated
		Well	.6	12-23-41	
Burlington, N. C.	Alamance County	Stoney Creek	.1	3-30-48	Treated
		Stoney Creek	.2	3-30-48	Untreated
		Stoney Creek impounded	.0	1-31-46	Treated
Burnsville, N. C.	Yancey County	Bolens Creek	.1	8-7-46	Treated
Canton, N. C.	Haywood County	Rough Creek	.0	3-18-46	Treated
Carolina Beach, N. C.	New Hanover County	Well No. 1	.2	11-5-47	Untreated
		Well No. 2	.1	11-5-47	Untreated
		Well No. 3	.1	11-5-47	Untreated
Carthage, N. C.	Moore County	Springs impounded	.1	11-6-46	Treated
Cary, N. C.	Wake County	Well	.0	2-5-46	Untreated
Cary, N. C.	Wake County	Well No. 1	.1	4-3-47	Untreated
		Well No. 2	.1	4-3-47	Untreated
		Well No. 3	.1	4-3-47	Untreated
		Well No. 4	.0	4-3-47	Untreated
Catawba, N. C.	Catawba County	Well No. 1	.9	8-3-48	Untreated
		Well No. 2	.2	8-3-48	Untreated
		Well No. 3	.4	8-3-48	Untreated
Chadbourn, N. C.	Columbus County	Well No. 1	.1	1-22-48	Untreated
		Well No. 2	.0	1-22-48	Untreated
Chapel Hill, N. C.	Orange County	Neville, Morgan & Price Crks impounded in University Lake	.1	6-24-46	Treated

Table II — Fluoride in Public Water Supplies of North Carolina — Continued
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Charlotte, N. C. Cherryville, N. C.	Mecklenburg County Gaston County	Catawba River impounded	.0	5-25-44	Treated
		Drilled well	.2	9-29-45	Untreated
		Well No. 1	.0	2-16-48	Untreated
		Well No. 3	.0	2-16-48	Untreated
		Well No. 6	.0	2-16-48	Untreated
		Well No. 7	.0	2-13-48	Untreated
		Well No. 8	.0	2-16-48	Untreated
		Well No. 9	.0	2-16-48	Untreated
		Parker Spring & Laughter Spring	.3	6-23-47	Treated
Chimney Rock, N. C.	Rutherford County	Well No. 1	.1	5-22-47	Untreated
China Grove, N. C.	Rowan County	Well No. 3	.2	5-22-47	Untreated
Clayton, N. C.	Johnston County	Well No. 1	.1	5-20-48	Untreated
		Well No. 2	.1	5-20-48	Untreated
		Well No. 3	.1	5-20-48	Untreated
Cleveland, N. C. Cliffside, N. C.	Rowan County Rutherford County	Well No. 4	.0	5-20-48	Untreated
		Well No. 5	.1	5-20-48	Untreated
		Well No. 3	.1	7-6-48	Untreated
Clinton, N. C.	Sampson County	Second Broad River impounded	.0	5-22-46	Treated
Clyde, N. C. Coats, N. C. Colerain, N. C. Columbus, N. C. Concord, N. C.	Haywood County Harnett County Bertie County Polk County Cabarrus County	Well No. 2	.2	4-20-48	Untreated
		Well No. 3	.3	4-20-48	Untreated
		Well No. 4	.1	4-20-48	Untreated
		Connors Creek impounded	.1	6-22-46	Treated
		Impounded springs	.1	11-13-46	Untreated
		Well No. 1	.7	7-3-47	Treated
		Horse Creek	.2	1-17-47	Treated
		Chambers Branch & Lumbly Branch impounded in Lake Concord	.2	1-22-46	Treated
		Well No. 1	.2	12-2-46	Treated
Conover, N. C.	Catawba County	Well No. 2	.1	12-2-46	Treated
Cooleemee, N. C.	Davie County	S. Yaddin River impounded	.0	5-22-46	Treated

Creedmoor, N. C.	Granville County	Ledge Creek impounded	.1	7-2-46	Treated
Crossnore, N. C.	Avery County	Well No. 1	.0	11-4-47	Untreated
Cullowhee, N. C.	Jackson County	Flat Branch & Long Branch	.1	8-9-46	Treated
Davidson, N. C.	Mecklenburg County	Catheys Creek impounded	.1	5-29-46	Treated
Dillsboro, N. C.	Jackson County	Drilled well	.2	12-11-46	Untreated
Drexel, N. C.	Burke County	Propst Creek	.0	5-23-46	Treated
Dunn, N. C.	Harnett County	Cape Fear River	.1	3-13-46	Treated
Durham, N. C.	Durham County	Flat River impounded in Lake Michie	.0	2-20-46	Treated
Edenton, N. C.	Chowan County	Well	1.0	5-24-47	Treated
Elizabeth City, N. C.	Pasquotank County	Well	1.3	5-24-47	Treated
Elizabethtown, N. C.	Bladen County	234 wells	.4	2-16-46	Treated
Elkin, N. C.	Surry County	Well No. 1	.2	2-26-48	Untreated
Elk Park, N. C.	Avery County	Well No. 2	.4	2-26-48	Untreated
Ellerbe, N. C.	Richmond County	Big Elkin Creek impounded	.1	5-27-46	Treated
		Cooks Spring impounded	.1	11-13-46	Untreated
		Well No. 1	.0	10-28-47	Untreated
		Well No. 2	.0	10-28-47	Untreated
Elm City, N. C.	Wilson County	Well No. 3	.0	10-28-47	Untreated
		Well No. 1	.1	4-25-47	Untreated
		Well No. 2	.1	4-25-47	Untreated
		Well No. 3	.1	4-25-47	Untreated
Elon College, N. C.	Alamance County	Well No. 1	.0	1-22-48	Untreated
Enfield, N. C.	Halifax County	Well No. 2	.0	1-22-48	Untreated
Fair Bluff, N. C.	Columbus County	Well No. 1	.0	1-22-48	Untreated
		Well No. 2	.4	2-3-48	Untreated
		9 wells	.9	5-20-48	Untreated
Fairmont, N. C.	Robeson County	Well No. 1	.2	5-20-48	Untreated
		Well No. 2	.3	7-22-48	Untreated
Faison, N. C.	Duplin County	Well No. 4	.2	7-22-48	Untreated
		Well No. 1	.1	2-10-47	Untreated
Farmville, N. C.	Pitt County	Well No. 2	.1	2-10-47	Untreated
		Well No. 3	.7	11-11-47	Untreated
		Well No. 4	.5	11-11-47	Untreated
		Well No. 5	.5	11-11-47	Untreated
Fayetteville, N. C.	Cumberland County	Bonnie Doone, Kornbou, and Glenville Lake	.0	1-29-46	Treated
Fayetteville, N. C.	Cumberland County	Bonnie Doone, Kornbou, and Glenville Lake	.1	4-28-48	Untreated

Table II — Fluoride in Public Water Supplies of North Carolina — Continued
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Forest City, N. C. Fort Bragg, N. C. Fountain, N. C. Franklin, N. C.	Rutherford County Cumberland County Pitt County Macon County	Bracketts Creek	.0	3-7-46	Treated
		Little River	.1	9-13-46	Treated
		Well No. 1	.2	1-12-48	Untreated
		Well	.0	12-1-43	Untreated
Franklinton, N. C. Fremont, N. C. Fremont, N. C. Fuquay Springs, N. C.	Franklin County Wayne County Wayne County Wake County	Well No. 1	.1	11-19-47	Untreated
		Well No. 2	.1	11-19-47	Untreated
		Well No. 3	.1	11-19-47	Untreated
		Kearneys Creek impounded	.1	5-23-46	Treated
		Well No. 1	.3	4-26-48	Untreated
		Well No. 2	.1	4-26-48	Untreated
		Well No. 3	.3	4-26-48	Untreated
		Well No. 1	.2	9-25-47	Untreated
		Well No. 2	.2	9-25-47	Untreated
		Well No. 3	.4	9-25-47	Treated
Gastonia, N. C. Gatesville, N. C. Gibson, N. C. Gibsonville, N. C.	Gaston County Gates County Scotland County Guilford County	Wells 1 to 3	.0	4-28-44	Treated
		Long Creek (impounded)	3.6	12-3-46	Untreated
		Well No. 1	.5	5-14-47	Treated
		Well No. 2	.0	7-17-47	Untreated
		Well No. 3	.0	7-17-47	Untreated
		Well No. 1	.1	3-19-47	Untreated
		Well No. 1	.1	11-26-47	Untreated
		Well No. 2	.1	11-26-47	Untreated
		Well No. 3	.0	11-26-47	Untreated
		Well No. 4	.0	11-26-47	Untreated
Glen Alpine, N. C. Goldsboro, N. C. (Well field located at Seymour Johnson Field.)	Burke County Wayne County	Well No. 6-A	.1	11-26-47	Untreated
		Mixed sample of well water	.1	11-26-47	Treated
		Seymour Johnson Field			
		Little River	.1	2-26-46	Treated
		Well No. 1	.0	8-19-48	Untreated
		Well No. 3	.0	8-19-48	Untreated
		Well No. 4	.1	8-19-48	Untreated
		Well No. 5	.0	8-19-48	Untreated
Goldsboro, N. C. Graham, N. C.	Wayne County Alamance County				

Granite Falls, N. C.	Caldwell County	Rhodhiss Lake	.4	9-23-46	Treated
Greensboro, N. C.	Guilford County	Reedy Fork	.0	5-11-44	Treated
Greenville, N. C.	Pitt County	Tar River	.0	1-24-46	Treated
Grover, N. C.	Cleveland County	Well No. 1	.1	7-23-47	Untreated
		Well No. 3	.1	7-23-47	Untreated
Halifax, N. C.	Halifax County	Well No. 1	.0	3-21-47	Untreated
		Well No. 2	.0	3-21-47	Untreated
Hamlet, N. C.	Richmond County	Marks Creek impounded	.0	3-20-46	Treated
Hayesville, N. C.	Clay County	Johnson and Thompson Springs	.1	1-4-47	Treated
Henderson, N. C.	Vance County	East Sandy Creek impounded	.0	3-8-46	Treated
Hendersonville, N. C.	Henderson County	N. Fork Mills River, Bradley Creek	.2	8-28-46	Treated
Hertford, N. C.	Perquimans County	40 wells	.2	6-26-46	Treated
Hickory, N. C.	Catawba County	Catawba River impounded	.0	2-18-46	Treated
Highlands, N. C.	Macon County	Houston Branch impounded	.1	10-28-46	Treated
High Point, N. C.	Guilford County	Deep River impounded	.0	4-28-44	Treated
Hillsboro, N. C.	Orange County	Eno River	.0	5-29-46	Treated
Hiwassee Dam, N. C.	Cherokee County	Hiwassee River impounded	.1	7-1-46	Treated
Hookerton, N. C.	Greene County	Wells 1 to 4	.2	7-24-47	Untreated
		Well No. 5	.2	7-24-47	Untreated
Hot Springs, N. C.	Madison County	Cascade Spring impounded	.2	12-3-46	Treated
Hot Springs, N. C.	Madison County	Bubbling Springs	.1	12-4-43	Untreated
Huntersville, N. C.	Mecklenburg County	Well No. 1	.1	10-13-48	Untreated
		Well No. 2	.0	10-13-48	Untreated
		Well No. 3	.0	10-13-48	Untreated
		Well No. 4	.0	10-13-48	Untreated
		Well No. 5	.1	10-13-48	Untreated
Jackson, N. C.	Northampton County	Well No. 1	.0	3-24-47	Treated
		Well No. 2	.0	3-24-47	Treated
		Well No. 3	.0	3-24-47	Treated
		Well No. 4	.0	3-24-47	Treated
		Well No. 5	.5	3-24-47	Untreated
Jefferson, N. C.	Ashe County	Stanley Spring & Scott Spring	.1	11-21-46	Untreated
Jonesville, N. C.	Yadkin County	Well	.4	12-5-47	Untreated
Kannapolis, N. C.	Cabarrus County	Buffalo Creek impounded	.2	2-22-46	Treated
Kenansville, N. C.	Duplin County	Well No. 1	.1	5-15-47	Untreated

Table II — Fluoride in Public Water Supplies of North Carolina — Continued
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Kenly, N. C.	Johnston County	Well No. 1	.1	11-4-47	Untreated
Kernersville, N. C.	Forsyth County	Well No. 2	.1	11-4-47	Untreated
Kings Mountain, N. C.	Cleveland County	Harmonds Creek impounded	.2	5-22-46	Treated
		Kings Creek impounded	.1	3-20-46	Treated
		in city lake			
Kinston, N. C.	Lenoir County	Well No. 1	.2	5-15-47	Treated
		Well No. 2	.2	5-15-47	Treated
		Well No. 3	.2	5-15-47	Untreated
		Artesian well	.2	5-15-47	Untreated
Kure Beach, N. C.	New Hanover County	Well No. 1	.1	12-9-47	Untreated
		Well No. 2	.1	12-9-47	Untreated
		Well No. 3	.0	12-9-47	Untreated
LaGrange, N. C.	Lenoir County	Well No. 1	.2	5-15-47	Untreated
Landis, N. C.	Rowan County	Well No. 1	.2	3-30-48	Treated
		Well No. 2	2.2	3-30-48	Treated
Lansing, N. C.	Ashe County	10 springs impounded	.2	11-11-46	Untreated
Laurinburg, N. C.	Scotland County	Jordans Creek impounded	.1	7-16-46	Treated
Leaksville, N. C.	Rockingham County	Dan River	.1	6-12-46	Treated
Lenoir, N. C.	Caldwell County	Zacks Fork impounded	.1	12-12-43	Treated
Lexington, N. C.	Davidson County	Abbotts Creek	.1	2-18-46	Treated
Liberty, N. C.	Randolph County	Well No. 1	.0	9-14-48	Untreated
Liberty, N. C.	Randolph County	Well No. 2	.0	9-14-48	Untreated
		Well No. 3	.0	9-14-48	Untreated
Lilesville, N. C.	Anson County	Well No. 1	.4	11-14-47	Untreated
Lillington, N. C.	Harnett County	Well No. 1	.1	11-10-47	Untreated
		Well No. 2	.2	11-10-47	Untreated
		Well No. 3	.3	11-10-47	Untreated
Lincolnton, N. C.	Lincoln County	Walker Branch impounded	.1	6-29-46	Treated
		Well	.0	10-3-45	-----
Linville, N. C.	Avery County	Well No. 1	.1	9-14-48	Untreated
Littleton, N. C.	Halifax County	Well No. 1	1.3	5-26-47	Untreated
Louisburg, N. C.	Franklin County	Tar River	.0	6-10-46	Treated
Lucama, N. C.	Wilson County	Well No. 1	.4	5-15-47	Treated

Lumberton, N. C. Maiden, N. C.	Robeson County Catawba County	Lumber River Well No. 1 Well No. 2 Well No. 3 Well No. 4 Well No. 1 Well No. 2 Well No. 3 3 wells	.0 .1 .1 .1 .0 .0 .0 .0	3-7-46 10-28-47 10-28-47 10-28-47 10-28-47 12-16-47 12-16-47 12-16-47 12-16-47	Treated Untreated Untreated Untreated Untreated Untreated Untreated Untreated
Manteo, N. C.	Dare County				
Marion, N. C.	McDowell County	Mackeys Creek & Clear Crk. Well No. 3 Hunter Creek	.0 .2 .2 .1	12-16-47 12-16-47 8-29-46 12-18-46 9-10-46	Treated Treated Treated Treated Treated
Marshall, N. C. Marshville, N. C. (Refer to analysis from Monroe)	Madison County Union County				
Mars Hill, N. C. Mayodan, N. C. Mebane, N. C. Middlesex, N. C.	Madison County Rockingham County Alamance County Nash County	Creek near Bald Mountain Mayo River Mill Creek Well No. 1 Well No. 2 Well No. 1 Richardson Creek impounded in Lake Lee	.1 .1 .2 .0 .1 .1 .2	9-11-46 7-13-46 6-19-46 7-22-48 7-22-48 2-18-48 4-22-46	Treated Treated Treated Untreated Untreated Untreated Treated
Milton, N. C. Monroe, N. C.	Caswell County Union County				
Montezuma, N. C. Montreat, N. C. Moore Springs, N. C. Moorestville, N. C. Morehead City, N. C. Near Morganton, N. C. Mount Alry, N. C.	Avery County Buncombe County Stokes County Iredell County Carteret County Burke County Surry County	Spring Piney Creek impounded Spring Byers Creek 5 wells Henry Fork impounded Lovel Creek (Also Lovills Cr.) Lovills Creek Pee Dee River impounded in Tillery Lake Catawba River Well No. 1 Well No. 2 Well No. 3	.0 .1 1.0 .0 .5 .0 .0 .1 .1 .1 .1 .2 .8	1-11-47 8-26-46 3-28-47 4-24-46 4-3-47 4-29-46 5-3-46 4-13-48 6-20-46 6-10-46 12-2-46 12-2-46 12-2-46	Untreated Treated Untreated Treated Treated Treated Treated Treated Treated Treated Treated Untreated Untreated Untreated
Mount Gilead, N. C. Mount Holly, N. C. Mount Olive, N. C.	Montgomery County Gaston County Wayne County				

Table II — Fluoride in Public Water Supplies of North Carolina — Continued
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Mount Pleasant, N. C.	Cabarrus County	Well	.0	8-8-44	Untreated
Murfreesboro, N. C.	Hertford County	Well No. 1	.3	5-1-48	Untreated
		Well No. 2	.3	5-1-48	Untreated
Murphy, N. C.	Cherokee County	Marble Creek impounded	.1	7-15-46	Treated
Nashville, N. C.	Nash County	Well No. 1	.2	3-11-47	Untreated
		Well No. 2	.2	3-11-47	Untreated
New Bern, N. C.	Craven County	Well No. 1	.1	1-19-48	Untreated
		Well No. 2	.0	1-19-48	Untreated
		Well No. 4	.0	1-19-48	Untreated
		Well No. 6	.0	1-19-48	Untreated
		Well No. 8	.0	1-19-48	Untreated
		Wells No. 1-8	.0	1-19-48	Treated
Newland, N. C.	Avery County	Well No. 1	.1	2-13-48	Untreated
		Well No. 2	.1	2-13-48	Untreated
Newton, N. C.	Catawba County	Hildebran Creek impounded,	.2	10-23-46	Treated
		Jacobs Fork River			
Niagara, N. C.	Moore County	Well No. 1	.2	9-27-48	Untreated
North Wilkesboro, N. C.	Wilkes County	Reddies River impounded	.0	4-24-46	Treated
Oakboro, N. C.	Stanly County	Well No. 1	.2	7-22-48	Untreated
		Well No. 2	.2	7-22-48	Untreated
Old Fort, N. C.	McDowell County	Jarrett Creek	.0	12-5-43	Treated
Oteen, N. C.	Buncombe County	North Fork supply line of Asheville public supply	.1	9-5-47	Treated
		Tar River impounded	.1	6-28-46	Treated
Oxford, N. C.	Granville County	Wells No. 1 & 2	.0	4-25-47	Treated
Pembroke, N. C.	Robeson County	Well No. 1	.5	9-14-48	Untreated
Pikeville, N. C.	Wayne County	Well No. 2	.1	9-14-48	Untreated
		Well No. 2	.5	6-24-47	Untreated
		Well No. 3	.4	6-24-47	Untreated
Pilot Mountain, N. C.	Surry County	Mixed sample from 5 springs	.0	10-11-48	Untreated
Pinebluff, N. C.	Moore County	Rattlesnake Creek impounded	.2	6-26-46	Treated
Pinehurst, N. C.	Moore County	Spring impounded in reservoir	.1	12-14-46	Treated
Pineola, N. C.	Avery County				

Pinetops, N. C.	Edgemcombe County	Well No. 2	.2	9-15-47	Untreated
Pineville, N. C.	Mecklenburg County	Well No. 5	.2	9-15-47	Untreated
Pisgah Forest, N. C.	Transylvania County	Well No. 1	.5	6-25-47	Untreated
Plymouth, N. C.	Washington County	Davidson River	.1	9-23-46	Treated
Princeton, N. C.	Johnston County	Well	.5	5-11-46	Untreated
Raeford, N. C.	Hoke County	Well No. 1	.1	1-5-48	Untreated
Raleigh, N. C.	Wake County	Well No. 1	.0	12-20-46	Treated
		Well No. 2	.1	12-20-46	Treated
		Walnut Creek impounded in	.1	10-3-44	Treated
		Lake Johnson & Lake Raleigh			
Ramseur, N. C.	Randolph County	Sandy Creek	.1	6-10-46	Treated
Randleman, N. C.	Randolph County	Polecat Creek	.1	6-10-46	Treated
Red Springs, N. C.	Robeson County	Well No. 1	.0	10-13-48	Untreated
		Well No. 1	.0	10-13-48	Treated
Reidsville, N. C.	Rockingham County	Big Troublesome Creek	.2	1-25-46	Treated
Richlands, N. C.	Onslow County	Well No. 1	.3	1-2-48	Untreated
Rich Square, N. C.	Northampton County	Well No. 2	.0	8-24-48	Untreated
Ridgecrest, N. C.	Buncombe County	Mt. stream impounded (tributary to Swannanoa River)	.2	8-24-46	Treated
Riverbend near	Gaston County	Catawba River	.2	6-19-46	Treated
Mount Holly, N. C.	Halifax County	Roanoke River	.1	3-18-46	Treated
Roanoke Rapids, N. C.	Moore County	Bear Creek	.1	11-18-44	Treated
Robbins, N. C.	Graham County	Rock Creek & Burgins Creek	.2	12-20-46	Treated
Robbinsville, N. C.	Martin County	Well No. 1	.9	2-16-48	Untreated
Robersonville, N. C.		Well No. 2	.9	2-16-48	Untreated
		Falling Creek impounded	.0	4-25-46	Treated
Rockingham, N. C.	Richmond County	Well No. 1	.1	3-10-48	Untreated
Rockwell, N. C.	Rowan County	Tar River	.2	5-8-44	Treated
Rocky Mount, N. C.	Nash County	Well No. 1	.1	5-15-47	Untreated
Rose Hill, N. C.	Duplin County	Well No. 1	.1	2-12-47	Untreated
Rowland, N. C.	Robeson County	Story Creek & Satterfield Cr. impounded in city lake	.0	4-24-46	Treated
Roxboro, N. C.	Person County	Well No. 1	.2	8-19-47	Untreated
		Well No. 1	.0	4-23-45	Treated
Rural Hall, N. C.	Forsyth County	Catheys Creek	.0	2-18-46	Treated
Rutherfordon, N. C.	Rutherford County	Yadkin River	.1	1-9-47	Treated
Salisbury, N. C.	Rowan County	Heatherly Heights Springs, Kelley Creek	.2	8-30-46	Treated
Saluda, N. C.	Polk County				

Table II — Fluoride in Public Water Supplies of North Carolina — Continued
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Sanford, N. C.	Lee County	Licks Creek	.0	5-14-46	Treated
Selma, N. C.	Johnston County	Well No. 1	.0	6-5-47	Untreated
		Well No. 2	.0	6-5-47	Untreated
Shelby, N. C.	Cleveland County	First Broad River impounded	.1	6-17-46	Treated
Siler City, N. C.	Chatham County	Rocky River impounded	.2	6-12-46	Treated
Smithfield, N. C.	Johnston County	Neuse River	.0	4-25-46	Treated
Snow Hill, N. C.	Greene County	Well No. 1	.4	5-26-47	Untreated
Southern Pines, N. C.	Moore County	Southern Pines Water Lake	.1	7-25-46	Treated
Southport, N. C.	Brunswick County	Well No. 1	.2	4-17-48	Untreated
		Well No. 2	.2	4-17-48	Untreated
Sparta, N. C.	Allegheny County	Well No. 1	.3	6-27-47	Untreated
		Well No. 2	.4	6-27-47	Untreated
Spindale, N. C.	Rutherford County	Catheys Creek	.0	4-23-46	Treated
Spring Hope, N. C.	Nash County	Well No. 1	.1	7-15-47	Untreated
		Well No. 2	.1	7-15-47	Untreated
Spruce Pine, N. C.	Mitchell County	Crystal Falls Creek	.0	2-3-47	Treated
Stanley, N. C.	Gaston County	Beaver Creek	.1	1-22-47	Treated
		Well	.0	9-27-45	Untreated
		Well No. 1	.3	11-20-47	Untreated
		Well No. 2	.2	11-20-47	Untreated
		Well No. 3	.1	11-20-47	Untreated
		Well No. 4	1.0	11-20-47	Untreated
Stantonsburg, N. C.	Wilson County	Well No. 1	.3	10-23-47	Untreated
Star, N. C.	Montgomery County	Well No. 1	.1	3-10-48	Untreated
		Well No. 2	.1	3-10-48	Untreated
		Well No. 3	.1	3-10-48	Untreated
		Well No. 4	.1	3-10-48	Untreated
Statesville, N. C.	Iredell County	Gregory Branch	.1	2-22-46	Treated
Sylva, N. C.	Jackson County	Fisher & Dills Creek	.2	11-12-46	Treated
Tabor City, N. C.	Columbus County	Well No. 1	.9	11-22-48	Untreated
		Well No. 2	.6	11-19-48	Untreated
		Well No. 3	1.0	9-22-48	Untreated
Tapoco, N. C.	Graham County	Yellowhammer Creek	.1	9-25-46	Treated

Tarboro, N. C.	Edgecombe County	Tar River	.0	4-26-46	Treated
Taylorsville, N. C.	Alexander County	Well No. 1	.2	3-30-48	Untreated
		Well No. 3	.2	10-24-46	Untreated
		Well No. 4	.1	10-24-46	Untreated
Thomasville, N. C.	Davidson County	Abbotts Creek	.0	1-26-46	Treated
Troutman, N. C.	Iredell County	Well No. 1	.1	9-24-48	Untreated
		Well No. 2	.0	9-24-48	Untreated
Troy, N. C.	Montgomery County	Denson Creek impounded	.1	6-20-46	Treated
Tryon, N. C.	Polk County	Big Fall Cr. impounded, Little Fall Cr. Dark Corner Cr.	.1	6-26-46	Treated
Valdese, N. C.	Burke County	Micols Creek impounded	.1	7-12-46	Treated
Vass, N. C.	Moore County	Well No. 1	.2	7-16-47	Untreated
Wadesboro, N. C.	Anson County	Jones Creek impounded	.1	7-12-46	Treated
Wake Forest, N. C.	Wake County	Smith Creek, Alston Branch	.1	7-24-46	Treated
Wallace, N. C.	Duplin County	Well No. 1	.2	5-15-47	Untreated
Warrensville, N. C.	Ashe County	Spring	.1	1-18-47	Untreated
Warrenton, N. C.	Warren County	Well No. 1	.1	12-20-46	Treated
		Well No. 2	.8	12-20-46	Treated
		Well No. 3	.0	4-7-47	Treated
Washington, N. C.	Beaufort County	Mixed samples from 22 wells	.3	1-23-46	Treated
Waterville, N. C.	Haywood County	Big Creek	.1	9-17-46	Treated
Waynesville, N. C.	Haywood County	Cherry Cove, Shiney Creek, Rocky Branch	.1	7-20-46	Treated
Weaverville, N. C.	Buncombe County	Wagner Branch, Ox Creek	.1	10-4-46	Treated
Weldon, N. C.	Halifax County	Roanoke River	.1	7-11-46	Treated
Wendell, N. C.	Wake County	Well No. 1	.1	2-17-48	Untreated
		Well No. 2	.1	2-17-48	Untreated
		Well No. 4	.1	2-17-48	Untreated
		Well No. 1	.0	1-8-48	Untreated
Whiteville, N. C.	Columbus County	Well No. 2	.1	1-8-48	Untreated
		Cub Creek	.1	9-19-46	Treated
Wilkesboro, N. C.	Wilkes County	Well No. 1	1.5	10-15-47	Untreated
Williamston, N. C.	Martin County	Well No. 2, 3, 4	1.8	10-15-47	Untreated
		Well No. 5	2.0	10-15-47	Untreated
		Well No. 6	1.7	10-15-47	Untreated
Wilmington, N. C.	New Hanover County	Cape Fear River	.1	3-11-46	Treated
Wilson, N. C.	Wilson County	Contentnea Creek	.0	1-24-46	Treated
Windsor, N. C.	Bertie County	Well	3.0	7-17-42	---

Table II — Fluoride in Public Water Supplies of North Carolina — Continued
(Parts per million)

TOWN AND COUNTY		Source	Fluoride	Date of Collection	Type
Wingate, N. C.	(Refer to analysis of water from Monroe)				
Winston-Salem, N. C.	Forsyth County	Fraziers Creek impounded Impounding reservoir supplied by Salem & Walker Creeks	.1 .0	9-17-46 4-28-44	Treated Treated
Winterville, N. C.	Pitt County	Well No. 1	.2	8-12-47	Treated
Winton, N. C.	Hertford County	Well No. 3	1.2	12-4-46	Untreated
Woodfin, N. C.	Buncombe County	Reems Creek	.1	10-9-46	Treated
Woodland, N. C.	Northampton County	Well No. 1	.4	1-9-48	Untreated
		Well No. 2	.3	1-9-48	Untreated
Wrightsville Beach, N. C.	New Hanover County	Well No. 1	.4	5-8-47	Treated
		Well No. 2	.4	5-8-47	Treated
		Well No. 3	.4	5-8-47	Treated
Yadkinville, N. C.	Yadkin County	Well (South)	.5	6-26-47	Untreated
		Well (School)	.3	6-26-47	Untreated
Youngsville, N. C.	Franklin County	Well	.0	2-5-46	Untreated
Zebulon, N. C.	Wake County	Little River impounded	.1	7-15-46	Treated

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The Health Bulletin

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Vol. 64

SEPTEMBER, 1949

No. 9



GETTING READY FOR SCHOOL

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
Chickenpox	Influenza	Tuberculosis
Diabetes	Malaria	Typhoid Fever
Diphtheria	Measles	Venereal Diseases
Don't Spit Placards	Padiculosis	Vitamins
Fly Placards	Pellagra	Typhoid Placards
Endemic Typhus	Residential Sewage	Water Supplies
Flies	Disposal Plants	Whooping Cough
Epilepsy, Insanity, Feeble-mindedness, Mental Health and Habit Training.		

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care.	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile	Nine Months to One Year.
Diarrhea.	One to Two Years.
Breast Feeding.	Two to Six Years.
Table of Heights and Weights.	Instructions for North Carolina Midwives.

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J. W. R. NORTON, M.D., M.P.H., State Health Officer

JOHN H. HAMILTON, M.D., Acting Editor

GETTING READY FOR SCHOOL

The mother in the cover picture has included a very important item in getting her child ready for school. We feel sure that this is typical of the back-to-school preparations being made by many wise mothers who realize that regular visits to the dentist will contribute not only to their children's health, but also to their happiness and success in school. Making regular visits to the dentist for dental examinations and the early correction of dental defects is the first and most effective step in the control of tooth decay and the prevention of serious dental troubles.

Fortunately, this is a fact that is coming to be known and accepted by more and more of the school children of our State every year. They are learning it from Little Jack, the hero of the dental health puppet show, and from their friends, the school dentists on the staff of the Division of Oral Hygiene of the State Board of Health.

The school dentists who have had special training in children's dentistry, child psychology, and methods of teaching visit, each year, as many counties and as many schools as possible. They go into the elementary schools over the State where they teach Mouth Health, inspect the mouths of all of the children, make dental corrections for many underprivileged children, and refer other children to their own dentists. Most important of all, the school dentists make friends with the children. Every effort is made to provide for the

children experiences that will dispel the fear of the dental office and implant in their minds a friendly feeling toward the dentist and an appreciation of good dental health.

Little Jack has long been a favorite with the children. He, too, is getting ready for the new school year, his fifteenth year in visiting the schools. His new show will be enjoyed by approximately 250,000 children this year. Parents and teachers assert that improved practices, especially in regard to food selection and tooth brushing habits, follow in the wake of the puppet show.

The teachers in the elementary schools are making the most of the interest in dental health created by the school dentists and the puppet show. To help them in their follow up teaching, the Division of Oral Hygiene prepares and distributes dental health teaching aids consisting of a handbook for teachers, graded materials for classroom use, booklets, charts, posters, and news releases for school papers. The material is available to any teacher, free of charge, upon request to the Division of Oral Hygiene. A postal card from the teacher giving the grade in which the material is to be used and the approximate number of pupils is all that is necessary. We are gratified at the many requests for material being received from teachers throughout the State and hope that many others will avail themselves of this service.

THE SCHOOL-HEALTH COORDINATING SERVICE

of the

State Department of Public Instruction and State Board of Health

Prepared by

CHARLES E. SPENCER, Co-Director
ANNIE RAY MOORE, Health Educator
School-Health Coordinating Service

Status

The School-Health Coordinating Service is administratively responsible to the State Superintendent and the State Health Officer. It is financed by the state, through funds allocated to the State Department of Public Instruction by the Legislature and by the State Board of Health with funds derived either from the state or federal government. The International Health Division and the General Education Board of the Rockefeller Foundation have contributed financially to the program.

How Organized

The School-Health Coordinating Service has been designed by the State Superintendent of Public Instruction and the State Health Officer as a joint service unit of the State Department of Public Instruction and the State Board of Health to be responsible for the general supervision, promotion and administration of the North Carolina school health program. The personnel of the staff are employed, except for the person paid from Foundation funds, by either the State Department of Public Instruction or the State Board of Health.

The service was originally set up according to a proposal drawn up and signed by the two departments and functions according to policies originally agreed upon or revised from time to time by the State Department of Public Instruction and the State Board of Health. An advisory committee composed of five persons selected by the State Health Officer and the State Superintendent of Public Instruction acts in an advisory capacity in setting policies.

Responsibilities and Objectives

The School-Health Coordinating Service is responsible for administering, promoting, advising, assisting and cooperating with schools and health departments in all phases of school health and physical education including:

1. Health instruction in elementary and secondary schools with respect to personal and community hygiene, communicable disease control, mental hygiene, nutrition, family life education, safety and others.
2. Health services such as screening, medical and dental services.
3. Healthful school environment.
4. Physical education and recreation.

The School-Health Coordinating Service has also been delegated by the State Health Officer and the State Superintendent of Public Instruction the responsibility of coordinating to such an extent as is possible.

The School-Health Coordinating Service has also been delegated by the State with the colleges and universities engaged in the preparation of teachers in the areas of health, physical education and safety.

Character of Organization and Resource Personnel Available

The School-Health Coordinating Service is an administrative division of the State Department of Public Instruction and the State Board of Health and, as other divisions in the two departments, offers its services on a state-wide basis.

Personnel Available

Charles E. Spencer, Co-Director
C. P. Stevick, M.D., Co-Director
R. M. Fink, Ph. D., Consultant in Mental Hygiene

Miss Ruth O. Moore, Adviser in Physical Education

Mrs. Annie Ray Moore, Health Educator

Mrs. Georgia W. Barbee (Negro) Health Educator

Mrs. Julia P. Harshaw (Negro) Nurse

Kind of Help Available

The following is a list of some of the services offered by the various staff members.

1. Advisory and consultative service to health officers, superintendents and principals with regard to the organization, administration, and conduct of the school health and physical education programs.

2. Assistance to administrators with their in-service training program by means of county and local conferences, workshops, institutes, study groups and other types of professional meetings.

3. Technical and advisory service in survey of health facilities, services and instructional activities and recommended improvements.

4. Advisory and technical assistance in health services such as screening, audiometer testing, medical examinations and follow-up procedures.

5. Encourage and assist local and county schools in preparation and selection of materials for local use.

6. In cooperation with certain colleges and universities jointly sponsor health education workshops for school and health department personnel.

7. Assist county and local schools in the utilization of local, state, and federal resources for health improvement.

8. Cooperate with other agencies and organizations in worthwhile activities designed to conserve or improve the health of children and adults.

9. Cooperate with colleges and universities in the improvement of their programs of health and physical education.

10. Participate in professional meetings of health and education organizations.

11. Prepare and distribute curriculum material, periodic bulletins and materials on special subjects relating to

health in accordance with recognized needs and requests.

12. Sponsors and conducts state, regional and county conferences with institutes in accordance with needs and available time.

13. Maintains a library of professional books and other materials which are available for loan to schools and health departments for certain professional and in-service education.

Selected Resource Material Available*

1. Manual of Screening and Medical Examination for Elementary Schools

2. Health Appraisal Forms—@ \$2.50 per 1000

3. "Twelve Areas for Health Education"

4. Suggested 12 Year Program of Health and Physical Education for the Public Schools of North Carolina.

5. Criteria for Evaluating School Health and Physical Education.

6. Curriculum material in health, physical education and safety will be available as soon as completed.

7. Bibliographies of materials on various phases of health.

8. Bulletin—Folk and Square Dance Material.

9. Bulletin—Physical Education Activities for Elementary Grades—Indoor Games.

10. "Betty Jean is Ready for School" of interest to those concerned with pre-school children; "Betty Jean Grows Up" for adolescents. Price: Single copy 10¢, 20 or more 5¢, \$5.00 per 100.

11. "Human Relations in the Classroom" Book I and Book II. 1-5 copies \$2.50—5 or more \$2.40.

12. Mental Health Kit—price \$1.55.

13. School Health Policies—Price 20¢ each.

14. Play—Sing a Song for Health—for grades 1-3.

15. A limited number of the following committee reports:

a. Nutrition

b. Sanitation

c. Physical education

d. School Community Cooperation for Better Health

*Literature Available from State Board of Health, see page 2.

- e. Healthful School Living
- f. Education for Family Living
- g. Mental Hygiene
- h. Communicable Disease

How to Request Help or Materials

Requests for help or materials may be secured by writing or contacting Charles E. Spencer and/or Dr. C. P. Stevick or by writing or contacting the individual staff member whose services is desired.

Specific Projects in which the School-Health Coordinating Service Can Assist in Organizing and Developing.

The School-Health Coordinating Service can assist:

1. County, city and local groups in planning programs, conferences, workshops and other professional meetings.
2. In various types of surveys.
3. In the screening and health appraisal procedures.
4. In planning playground layouts, and in the selection of playground and physical education facilities.
5. Local groups in curriculum improvement projects.
6. In the organization of health committees and councils.
7. Colleges and universities in developing higher standards with respect to health, physical education, and safety.

HEALTH, PHYSICAL EDUCATION AND SAFETY CURRICULUM DEVELOPMENT IN NORTH CAROLINA SCHOOLS

By

RUTH O. MOORE, Physical Education Adviser
School-Health Coordinating Service

The North Carolina Health, Physical Education and Safety Curriculum Project grew out of the need for increasing the emphasis on health, physical education and safety and rewriting the North Carolina Health, Physical Education and Safety Course of Study.

The State Superintendent of Public Instruction, Dr. Clyde A. Erwin, appointed the following to direct and guide the work of the local and State Curriculum Committees: Mr. Charles E. Spencer, Mrs. Annie Ray Moore and Miss Ruth O. Moore from the School-Health Coordinating Service and Mr. John Cameron and Mr. John Noe from the Division of Instructional Service, State Department of Public Instruction.

The first and most important decision of the Steering Committee, concurred in by Dr. Erwin and Dr. Highsmith, Director of the Division of Instructional Service, was to make the curriculum work a project which would (1) improve the local school health, physical education and safety programs, (2) serve as an inservice training program and (3)

have materials prepared for a curriculum bulletin in the areas of health, physical education and safety to be published and distributed to the schools of the State.

The first procedure was to invite state-wide participation. Each county and city school superintendent was invited by the State Superintendent to appoint in both the white and Negro schools a general curriculum chairman with three sub-chairmen, one for health, one for physical education and one for safety. These chairmen were asked to attend the district meeting which was scheduled for their section of the State.

In the fall eleven district meetings, six for white and five for Negro schools, were held in the different sections of the State for the purpose of planning local curriculum work. These meetings were conducted by the members of the Central Steering Committee. In addition to the school committee chairman, principals, superintendents, supervisors, health department personnel and college health and physical education per-

sonnel were invited to the district meetings.

In addition to the local committees a State Curriculum Committee of about 120 people was set up to:

1. Receive and assemble materials and suggestions from the district and local groups.
2. To prepare materials to send out to local committees.
3. To do the detail work of preparing the tentative material for the course of study in the three areas of health, physical education and safety.

The membership of the State Curriculum Committee consisted of:

1. Thirty-three elected representatives from the eleven district meetings.
2. Selected superintendents, principals, supervisors, elementary and high school teachers.
3. Representatives of local health departments.
4. Representatives from college departments of Health and Physical Education.
5. Representatives from the State Departments of Health and Education.

The first meeting of the State Curriculum Committee was held in Chapel Hill on Friday, December 3, 1948. Following a general session in which certain policies were set up, the group was divided into areas of health, physical education and safety to do more concentrated work in their particular areas. The health education group decided that their work would be comprised of the following sub-areas:

1. Family life education
2. Communicable disease and sanitation
3. Mental hygiene
4. Detection and correction of defects
5. Personal health practices
6. Community health

Members of the sub-committees selected representatives to serve on a coordinating health committee.

The physical education group decided that the following areas of activities should be taken into consideration in writing up their materials:

1. Rhythms
2. Games
3. Sports
4. Stunts and self-testing activities
5. Aquatics
6. Outdoor and camping activities

As in the health group, representatives were selected to serve on a coordinating committee.

The function of both the health and the physical education coordinating committees was to prevent overlapping of material and to assist in getting a balanced program.

The safety education group organized their work into the following sub-committees:

1. Travel safety
2. Home and farm safety
3. Safety in recreation and sports
4. Fire prevention and protection
5. Safety in work
6. School safety
7. First aid

In order to get the cooperation, interest and assistance of all agencies and organizations concerned with health, physical education and safety, a state-wide conference was held in Chapel Hill. At this conference each agency was requested and given an opportunity to make recommendations for improving the school health program of the State.

During the school year the local committees kept the State Committee informed of their work by periodic reports while summary statements of the State meetings were sent to all local chairmen.

The second round of district meetings was held in February, six for white schools and five for Negro schools. In these district meetings progress reports were made by each local chairman as to the work which was being carried on in his administrative unit. Those present received much stimulation and inspiration from the reports which were made. The State Committee members present at each district meeting reported briefly to the group on the progress and work which was being done by the State-wide Committees.

The State Curriculum Committees—Health, Physical Education and Safety

—each held, in addition to the first general meeting, two additional meetings during the spring. These meetings were planned at separate times so that all members of the Steering Committee would be able to attend each committee meeting. The coordinating committees of the health and the physical education groups each met in May to go over the work which had been done up to that time, and to make plans for future work for their respective committees.

A Committee on Organization and Administration composed of representatives from the three groups was also appointed. This committee planned in brief the general outline dealing with the organization and administration phase of the State Curriculum Bulletin. This committee accepted the responsibility to prepare this material.

The health, physical education and safety personnel of the School-Health Coordinating Service and the Division of Instructional Service were kept very busy throughout the year working with the committees. The interest that was shown and the amount of work that was in the county and city units and in the individual schools more than justified the emphasis which had been given to the curriculum development

project. The work of the local units developed in many patterns. Some schools worked on all three areas, other units selected only one area, and in still other units there were pilot schools or special committees concerned with the curriculum work. A number of workshops, conferences, institutes and other types of professional meetings were held in connection with this program.

Reports from many local chairmen were sent in at the end of the school year. These reports were excellent and showed that a great deal of work and energy had been spent in working out the programs in these local units. The schools which participated received their greatest benefits from the improvement of, and in some instances the beginning of, a health, physical education and safety curriculum planned to meet the needs and interests of the children in their own particular school or administrative unit.

A good curriculum is an ever changing one which meets the needs and interests of our boys and girls. This state-wide curriculum project was not completed last year, but will continue during the school year 1949-50 with renewed emphasis and interest.

SUGGESTIONS FOR SCHOOL HEALTH SERVICE

By

C. P. STEVICK, M. D., M. P. H.

Co-Director, School-Health Coordinating Service

Introduction

School health programs are usually described as having three basic elements, these are: I. Health Instruction, II. Healthful School Living, and III. Health Service. Health instruction consists of that part of the curriculum that includes the teaching of basic health knowledge through organized courses and through proper utilization of home, school and community experiences in health. Healthful school living consists of safeguarding the health of

the school child by means of a safe and sanitary physical environment, and a daily routine involving instructional techniques and personal relationships that incorporate the basic elements essential for the promoting of good mental health. Health services consist of specific medical and allied procedure that are essential to preserve and improve the health of school children.

Although the above classification of the three elements of the school health program is commonly used it is very important for teachers and public

health workers alike to realize that the school health program in actual operation is a combined whole. Health services and certain features of the physical environment are extremely valuable from the instructional standpoint. At the same time measures to improve personal health or school and home environment may easily fall short of accomplishing their potential benefit if not adequately followed up by careful health instruction.

This particular discussion is of necessity limited to health services. Excellent brief presentations of the other parts of the complete school health program are given in the following pamphlets: "Improving the School Health Program in the Southern Region" which may be obtained from Mr. Orville Calhoun, State Department of Education, Tallahassee, Florida at thirty cents per copy and "Suggested School Health Policies" which may be obtained from the Health Educational Council, 10 Downing Street, New York 14, New York at a cost of twenty-five cents per copy.

School health services have three major purposes:

1. Protection of the school child from health hazards normally present when groups of children are gathered together.
2. Correction of defects that will interfere with the child's learning process and that may prevent him from realizing his full physical and mental capabilities as a citizen.
3. Developing habits and attitudes regarding health service and acquiring information as an essential part of general health education.

Preschool Service

Just as school health service should be examined only as an essential part of the overall school health program so should the school health program be examined as part of the life-time health protection of the individual from birth through adult life. Actually preparation of the child for school life should begin at birth with correction of defects, careful feeding, general care, and after a few months immunization. Public health

program of maternal and infant hygiene when properly carried out together with adequate private medical care prepare the child for school without special efforts directed solely at school needs.

It is customary in this state to hold a series of preschool clinics each spring to correct physical defects of children not previously seen in well child clinics or who have neglected to seek private care. Immunizations are completed at the same time. It is considered satisfactory in most cases to delay smallpox immunization until the age of 5 years. In view of the state requirement that smallpox immunization be completed before entering school it is reasonable to expect large numbers of children to wait until this age before receiving this immunization. It is a serious mistake, however, for reliance to be placed on the preschool clinics for doing the initial immunizations for diphtheria and pertussis. Pertussis vaccine should be given in the first three months of life since this period brings the greatest danger from this disease. Between six and nine months diphtheria toxoid should be given, preferably in the mixture containing both tetanus toxoid and pertussis vaccine. The use of such a mixture at six to nine months should not replace the use of plain pertussis vaccine at three months or earlier, instead the pertussis vaccine contained in the mixture is a very necessary booster for the immunization given at the earlier age.

The pre-school clinic affords an excellent occasion for giving booster doses of diphtheria toxoid. This should be done without Schick testing since it not only saves time and effort but also because even in a Schick negative child the booster does will definitely prolong the protection. We now know that diphtheria immunity declines steadily after the peak is reached and unless booster doses are given or exposure to carriers takes place the remaining immunity is valueless after a few years. With our present low diphtheria rates exposure to carriers can no longer be relied on to maintain immunity produced by an in-

itial immunization without one or more booster doses.

In operating pre-school clinics every effort should be made to avoid long tiresome waiting for parents and children and to offset the unpleasant experience of immunizing injections with some interesting activity provided by the school staff or voluntary assistants.

The approximate number of pre-school children should be obtained in advance of the clinic date. If this number is very large notice should be sent out that groups with last names starting with certain portions of the alphabet would be seen at one particular time and that others would be seen at other scheduled hours. Families who are not able to attend the clinic at the scheduled time should be invited to one of the regular health department well-child clinics. As a matter of fact, in areas where transportation is not a problem emphasis placed on attending regularly scheduled infant hygiene or well-child clinics will make possible a reduction in the load of pre-school clinics.

Follow-up by the nurses of the more serious defects located among pre-school children should probably take place immediately while nursing time to follow-up less severe defects might be saved until after school opened. The parents being instructed at the clinics how to use existing resources to have the defects corrected.

Teacher-Nurse-Physician Teamwork

In North Carolina as in most southern states school health service is rendered by public health departments and in addition the nursing service is carried out on the district plan. The district plan requires that each nurse in a health department be assigned a district of the county or city and that within her district she carry out all types of public health nursing including school work. This has distinct advantages. First, it conserves travel and time. Secondly, the nurse learns more about the families she serves. When school problems come up she is able to

consider them in terms of the overall family situation.

Following the pre-school program school health activities move into the school itself. Within the first few days after school opens the district public health nurses should consult with the principals of their respective schools and outline the schedule of school visits for the year. Unless the principal and teachers know the nurse's schedule and have arranged their own plans to fit in closely with it much confusion may arise, time is wasted, and the instructional opportunities provided by the health services are largely lost.

The district nurse next should contact individual teachers in the schools and outline the plans in detail. This may need to be preceded by a meeting of all teachers in the school to distribute general information.

The time needed to complete these preliminary plans for the school year should probably be taken at the temporary expense of other activities in the nurses schedule so that all schools will be fully prepared shortly after school opens for the season's health service program. The separate items of this program can then be handled one by one by the teachers and nurses on the basis of a certain number of regularly scheduled hours weekly or monthly until they have been completed. The nurses schedule should be made known clearly to each school staff member and followed carefully.

The teacher-nurse conference during the planning period should include discussion of:

1. Daily observation
2. Isolation and exclusion
3. Screening
4. Periodic examinations
5. Medical emergencies

The health department policies in these matters as established by the health officers and his advisors on school health should be followed closely by the nurse and any special problems discussed with the health officer. He in turn will need to discuss the general program of school health service with the superintendent of the school unit

in advance of the season and will also work out with him the solution of special problems as they arise. Frequently time will be given to the health officer by the superintendent to outline the school health service program briefly to all of the teachers at their first county or city-wide meeting.

Daily observation of the children in her grade should be carried out by each teacher. This is done the first thing in the morning as the opening exercises proceed. Its purpose is to detect children with signs of acute illness. It is also continued during the day as the children work and play in order to note deviations from normal that might indicate physical defects or chronic illness. Such observation should be come a habit with the teacher and after she has worked with the children for a week or two she should be able to detect changes due to illness as rapidly as an observant mother.

The nurse can help the teacher become familiar with various signs to watch for and to assist in planning for action when illnesses are detected.

Isolation and exclusion of children with acute illnesses should be governed by a simple rule. "When a child is sick send him home as soon as possible." Many serious and highly contagious diseases have no specific symptoms or signs other than those of fever and general malaise. A room should be available so that a sick child can be excluded from the classroom while waiting for his parents to come for him or for someone from the school to take him home. If possible the teacher should telephone the health department office to leave a message for the nurse regarding the excluded child so that a general public health follow up can be made if indicated. When no telephone facilities are available the teacher can report to the nurse on the latter's next scheduled visit or write a note to her.

In the case of children with head lice and other conditions that require prompt attention but not necessarily exclusion word should also be sent to the nurse so that she can attend to the matter on her next scheduled visit.

For this purpose if for no other it is more advisable for the district nurse to schedule frequent short visits to schools rather than longer visits at infrequent intervals. A routine should be worked out in each school so that messages from teachers will be left at a designated point in the school office for the nurse.

Screening is an intensification of daily observation that requires certain specific procedures in addition to simple observation. This is described in the pamphlet entitled "Screening and Medical Examination of School Children" prepared by the North Carolina State Board of Health and State Department of Public Instruction. Copies of this pamphlet may be obtained by writing to the School - Health Coordinating Service, Box 2091, Raleigh.

Here again the nurse assists the teacher in learning the techniques required and in securing the materials necessary. After the teacher has completed the screening of her class she leaves word for the nurse. The nurse and teacher go over the screening records together and any doubtful cases are rechecked by the nurse.

The nurse next plans for medical examinations of the children found to have defects. Usually this will mean scheduling a clinic at the school and inviting parents to be present while the health officer or clinician checks each child and confirms the need for medical referral. These examinations by the physician are usually not intended to be complete but rather are a follow-up of the screening process. Defects found are discussed with the parents and they are assisted in making plans for having the corrections made.

The nurse and teacher both need to make notes as to the nature of the defect. The teacher makes any changes necessary for the individual children in the instructional routine. After a reasonable time has passed the teacher and nurse confer regarding the children with defects and those not corrected are followed by the nurse or teacher as mutually decided upon.

Audiometer testing is a technical part

of screening that is handled separately, usually by a person with special training. The Massachusetts Vision Test may also be used by trained personnel in lieu of the standard vision screening procedure with Snellen charts. The Massachusetts test is the only mechanical vision test recommended for school use at present and is not suggested as a substitute for the Snellen test in this state unless special attention to vision is desired by the local school and health authorities and all other parts of the school health program are being handled satisfactorily.

Other specialized screening procedures such as tuberculin testing should be planned with school authorities well in advance. Care should be taken not to emphasize special screening activities at the expense of the basic general program.

Where indigency is a problem referral is made at the proper time to indicated community agencies for financial assistance in having corrections made.

Periodic examination of selected groups of children should be carried out in addition to the screening program. This examination is intended to be more than a screening device and should be planned so as to have as high an education value as possible.

From the standpoint of the medical and dental professions this examination constitutes a golden opportunity to indoctrinate children into the routine of private medical and dental care that should be followed on a life-time basis for the optimum preservation of health. In other words, this can be public relations at an impressionable age. With such an objective in mind a friendly and interested manner on the part of the examining physician or dentist is highly essential. The examination should be as complete as possible including a urinalysis, hemoglobin determination and other laboratory procedures as may be indicated.

From the school standpoint the periodic examination constitutes an excellent opportunity to reinforce classroom instruction at the various grade levels. Such instruction could cover not only

physiological and biological subject matter but in the upper grades should include the broader aspects of medical and dental care such as the nature and place of the private practitioner and public health agencies in our society, the importance of medical care during pregnancy, before marriage and during childhood, middle life and old age.

At the present time the general recommendation is that the periodic examination be carried out no more often than once every three years or about four times during the school period. For athletes the examination should be yearly. In North Carolina with rather limited facilities available the periodic examination might have to be scheduled even less frequently and if this is necessary correlation should be attempted with the ninth grade course in health required in all schools.

The place where such examinations are held needs to be considered. To achieve their ultimate in educational value they should be held in the office of the family physician or dentist. Arrangements can probably be made in some areas to have this done at a moderate fee paid privately or for indigents out of school health funds. In other areas such examinations could be carried out in the health department examining room or in remote areas in the individual schools.

Medical emergencies should be planned for in each school. The first aid equipment to be kept on hand should be recommended by a physician and no treatment other than emergency first aid should be rendered without direction from a physician. The writer once learned of a school first aid kit that included a hot water bottle. This was applied on one occasion to the abdomen of a girl with acute abdominal pain without a physicians advice. Serious damage might have been done by this simple treatment if the cause of the pain had been appendicitis.

Standing orders for calling a physician and an advance agreement with a physician to take such calls should be

made to handle medical emergencies where at all possible. The principal and all the teachers of each school should be familiar with the plan worked out.

One or more persons in each school

should qualify themselves in first aid if at all possible. The nurse or health officers might be able to arrange classes for various school personnel where necessary.

NORTH CAROLINA GOES FORWARD IN SCHOOL HEALTH

By

CHARLES E. SPENCER, Co-Director
School-Health Coordinating Service

Good health for all of the nearly 900,000 North Carolina public school children can't be bought like a commodity. However, the officials of the State Department of Public Instruction and the State Board of Health believe that \$876,211.00 will do much to aid schools and health departments to meet some of the health needs of children.

The last General Assembly granted the request of the State Board of Education for \$550,000.00 to be used as grants in aid to city and county school administrative units for school health work. In addition, local health departments will receive from the State Board of Health \$326,211.00 for school health work. State Board of Education funds will be allocated to the school administrative units on the basis of 50 cents per pupil in average daily membership for the previous year. In addition \$1,000 will be allocated to each county regardless of school membership.

State Board of Health funds will be allocated on the basis of 40 cents per pupil in average daily membership to county, city and district health departments.

It is expected that the new funds to schools and health departments will not be used to take over any health activities carried on heretofore by local schools and health departments but will be used to expand and improve the health service rendered school children.

In order to help assure the wise expenditure of both funds local school superintendents and health officers will be required to get together and jointly plan how the money will be spent. This

plan must be submitted to the School-Health Coordinating Service for approval. However, since specific health needs vary considerably in different sections of the State and since certain health services are not available at any price on a State wide basis, no attempt has been made to specify exactly the items of expenditure except that all funds must be spent for school health.

In communications sent to superintendents and health officers the following items of expenditures were listed:

1. Medical, dental, nursing, educational, technical and allied personnel. Helping teachers or supervisors of health, physical education and safety may be employed but teachers for classroom instruction should be paid as formerly.
2. Fees for clinicians services (examinations and other diagnostic services).
3. Correction of physical defects for school children whose parents are unable to pay for health services and who are not otherwise provided for.
4. Travel of personnel and for transporting children to clinics and hospitals.
5. Supplies and equipment essential for conducting a school health program.
6. For approved in-service training programs.

Planning a budget and employing additional personnel is only the first step in the development of an effective school health program. Health officers and superintendents will need the full

cooperation of principals and teachers in planning and carrying out the details of the total school health program.

Since there are many other agencies and organizations besides schools and health departments that are vitally interested in the health of children it is important that positive steps be taken to get all groups to cooperate and co-ordinate their efforts. In some instances this has been achieved, at least in part, through the organization and operation of a community health council with representatives from the major community groups interested in child health.

Health needs will vary in different counties and cities of the State and within the counties and cities and the relative seriousness of these problems will vary. Listed below are some of the problems that seem to be more or less common to all parts of the State:

1. Accidents
2. Malnutrition
3. Family life problems including sex education and maternal and child care.
4. Mental Hygiene problems including tensions, fears and maladjustment.
5. Communicable diseases including intestinal and respiratory disease, venereal disease and diseases spread by insects and animals.
6. Alcoholism and narcotism.
7. Non-communicable diseases such as cancer and heart disease.
8. Sanitation.
9. Personal health problems relating to balanced living with respect to sleep, rest, recreation and work.
10. Inadequate health services for children, youth and adults, both public and private.

Considerable progress has been made in solving those problems that can be solved by public health measures. For example, by compulsory immunization smallpox and diphtheria have been practically eliminated. Also, typhoid has almost ceased to be a serious public health problem because of safe water supplies, adequate sewage disposal and proper handling of food and milk.

However, those health problems, the

solution of which depend largely on the exercise of intelligent actions of individuals, are still major problems. For example, deaths from accidents have increased. Deaths from heart disease and cancer have also increased. The increase from the latter two causes can be attributed in large part to the increase in the span of life due to decrease in deaths from other causes.

This means that we must more and more depend upon education for decreasing death rates and for improving the quality of life.

Health education must be for children, youth and adults for effective results. It is much more difficult to reach adults than children but health departments, schools and other agencies should utilize every avenue for educating out-of-school people regarding health and disease.

The schools offer the easiest approach to the solution of many health problems for the reason that the children are in school about six hours of each day.

Education of children with respect to health should be through several approaches:

1. Health Education Through Health, Physical Education and Safety Instruction.

In North Carolina health instruction is required in grades one through eight. Thirty minutes per day or the equivalent is the time allotment for health and an additional thirty minutes per day of physical education are required. On the high school level health and physical education is required in the ninth grade and recommended in grades ten, eleven and twelve. Also, health instruction is included as a part of such subjects as home economics, biology, sciences and the social studies. Driver training and general safety are offered in many schools. Health instruction to be functional must not only teach scientific information regarding health and disease but must develop proper health habits and attitudes. Instruction should be graded to the educational level of the child

and should be based upon, as far as can be determined, the immediate needs and probable future needs of the child and the community in which he is to live.

2. Health Education Through Provision for Healthful School Living.

Clean buildings, sanitary toilets, adequate lighting and ventilation, and adequate handwashing facilities are as important for their educational values as they are to protect children from hazards. The easiest and most economical method of educating the child with respect to certain health habits is by providing the kind of environment in which he can practice these habits.

3. Health Education Through Health Services.

The health services such as screening, medical and dental examinations and follow up procedures are important educational procedures as well as important services. Opportunities of periodic medical examination should be provided in every elementary and high school. Children and adults should become acquainted with all available approved health resources both private and public.

The health service program should aim to:

a. Provide an educational experience for children by teaching them the value of such services.

b. Detect in the early stages many of the physical and mental defects through screening and observation by teachers, and nurses and medical and dental examinations periodically.

c. Provide follow-up procedures to have the remediable defects corrected.

d. Assist in determining some of the major health problems and their causes which need concerted school and community action.

4. Health Education Through Community Health Activities.

The schools should actively participate in community health activities. They should not only cooperate with other agencies but should also assume definite responsibilities for reaching parents of school children. Often the parent is the key to solving the child health problem.

School health funds referred to in the first part of this article as well as other school health funds should be used in such a manner as to get the greatest good for the greatest number to meet the greatest need. Cents spent for prevention will mean dollars saved in correction.

MENTAL HEALTH IN THE CLASSROOM

By

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Consultant in Mental Hygiene

School-Health Coordinating Service

"No one likes me in this school and if things don't get better I'm going to quit school."

A sixth grade teacher in Forsyth County read this on a paper turned in by Eloise, a twelve year old girl. The sixth grade had just had a class in Human Relations. These boys and girls were learning to understand themselves and to get along happily with others.

A week later there was another class

in Human Relations—"Overcoming Personal Handicaps." What was the benefit to Eloise, who was unhappy at school? Within two weeks other sixth graders were including Eloise in their group as they took snapshots. She ran all over the school showing her picture to the teachers—she was one of "the gang" at last.

The teacher had one big question in her mind—"Who benefited most? Eloise,

or her classmates who had learned to help her to be happy?"

Two hundred teachers in North Carolina and several thousand throughout the country have taught classes in Human Relations to sixth, seventh, and eighth grade students. Pupils, teachers, and parents are almost unanimously in favor of the classes. A committee of the Group for the Advancement of Psychiatry has examined the lesson plans, visited some of the classes, and has stated that the classes are of great importance in the field of mental hygiene.

In North Carolina, the School-Health Coordinating Service has included Human Relations Classes as a part of its program for mental health in the public schools.

Printed lesson plans and teacher aids are now available for use in the sixth and seventh grades. Here are the titles of some of the lessons:

Our Inner Human Drives
How Emotions are Aroused
Our Unpleasant Emotions

Our Pleasant Emotions
Emotional Problems at Home
Why Daydream?

Colonel H. Edmund Bullis, Executive Director of the Delaware State Society of Mental Hygiene, author of Human Relations in the Classroom, is now preparing a series of lesson plans for use in the eighth grade.

School administrators and teachers who are interested in these classes may secure assistance in organizing them by requesting this service from the School-Health Coordinating Service.

A school superintendent who has instituted Human Relations Classes in his district remarked, "We believe the Human Relations classes will develop closer ties between teachers and pupils and in turn, will tie up the school and home more closely. Several principals have said that the course was worth as much to teachers as it was to pupils because they get better insight into the lives of the pupils and thereby are better able to teach them."

HEALTH EDUCATION WORKSHOP

by

ANNIE RAY MOORE, Health Educator
School-Health Coordinating Service

"This has been the most useful and most enjoyable summer school that I have ever attended;" "I appreciate the information given, the helpfulness, and the freedom of work;" "This workshop has meant more to me than any work I've ever done in summer school;" "Every teacher should have the opportunity to participate in the workshop;" —these statements were copied from the evaluation by the participants who attended the 1949 Health Education Workshop.

Again this summer the School-Health Coordinating Service and the University of North Carolina jointly conducted the Health Education Workshop at Chapel Hill during the first session of summer school.

The workshop was aided by a financial

grant from the North Carolina division of the American Cancer Society to the University of North Carolina. The following local Tuberculosis Associations awarded scholarships to participants from their respective counties and city: Durham, Chatham, Rowan, and High Point.

Each participant who completed the entire period received 6 semester hours graduate, undergraduate or certificate renewal credit according to his needs.

During the workshop session the participants were acquainted with new scientific information, new techniques, many resource personnel and new materials. Each person received a generous supply of free and complimentary materials.



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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
Cancer	Hookworm Disease	Scarlet Fever
Constipation	Infantile Paralysis	Teeth
Chickenpox	Influenza	Tuberculosis
Diabetes	Malaria	Typhoid Fever
Diphtheria	Measles	Venereal Diseases
Don't Spit Placards	Padiculosis	Vitamins
Fly Placards	Pellagra	Typhoid Placards
Endemic Typhus	Residential Sewage	Water Supplies
Flies	Disposal Plants	Whooping Cough

Epilepsy, Insanity, Feeble-mindedness, Mental Health and Habit Training.

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care.	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile Diarrhea.	Nine Months to One Year.
Breast Feeding.	One to Two Years.
Table of Heights and Weights.	Two to Six Years.
	Instructions for North Carolina Midwives.

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J. W. R. NORTON, M.D., M.P.H., State Health Officer

JOHN H. HAMILTON, M.D., Acting Editor

OBESITY

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Raleigh, North Carolina

Obesity is the quality of being overweight due to the accumulation of excess body fat. This statement needs some elaboration, however, for there are certain conditions in which an increase in weight above the normal is not due to fat, or if such is the case, is due to the accumulation of fat in only certain areas of the body. The latter is the case in the formation of fatty tumors or fatty deposits in the body. For example, overweight may be due to certain diseases of the heart, kidneys, and liver in which water accumulates in the system. Weight tables may aid one in determining the normal weight for age, height, and sex but perhaps the best index of obesity is appearance. If one is to use weight tables as an index of normal weight it may be necessary to add or subtract 10% of the weight designated in the table for the body build. If one is stocky with heavy bones 10% may be added whereas if one has a small frame 10% may be subtracted from the standard weight tables.

It must be emphasized that only one form of obesity exists. This is due to the excessive consumption of food. Various disorders have been credited with causing obesity. For example, it is common to hear that one's obesity is due to the thyroid or glands. It would be proper to say rather that one's obesity accompanied disease of the thyroid for it is certainly not due to the

thyroid gland itself. In other words body weight in the absence of diseases which cause water accumulation, or tumor formation is due to one factor, and one factor only, namely the amount of energy taken in as food. This statement is a fact. It has been demonstrated over and over again by chemical and mechanical means in the human being. Patients have been kept under observation over long periods of time under conditions which have enabled physicians to prescribe exact quantities of various foods. It has been possible to make those patients lose or gain weight at will by the number of calories given. Furthermore the physician is able to tell the patient beforehand exactly how much he will lose or gain on a certain caloric intake, and the physician will not miss that calculation more than a few ounces over a period of months. This is to say that the human body burns food much in the same way that a gasoline motor burns gasoline. We know that a Chevrolet, let us say, will go 18 miles on a gallon of gasoline. The human body likewise will derive so much energy from 1000 calories, no more and no less, and if this 1000 calories is not used as energy in entirety then the remainder is stored in the body—some as fat, some as protein, and some as carbohydrate.

The above statements are necessary as preliminaries in any discussion of

obesity. It is rare that such statements are accepted by the laity for there is popular belief that the quality of being fat or thin is due to family trait, glands, or heredity. It is quite true, of course, that a fat mother and a fat father will have as progeny fat children. If the children are not fat, then later in life they are apt to be. This has nothing to do whatsoever with heredity but it has a great deal to do with environment. The son will tend to copy his father's choice of foods and the daughter will tend to copy her mother's. Perhaps it would be more scientific to say that children, regardless of sex, will follow the example set by the parents. It is an axiom that if a young suitor would envisage his wife-to-be in years to come, then he must first study her mother. This seems especially true in regard to weight.

Obesity is a disease state because it is a deviation from good health. This is constantly in evidence. We know that fat people do not live long. Few doctors can remember a really fat patient who lived to 80, and only the rare fat patient who lives to 70. Life insurance companies are well aware of the mortality statistics in the obese and adjust their rates accordingly. No matter what other chronic disease the fat patient may have the physician will invariably use as the first step in his treatment the advice to reduce. And the fact is, furthermore, that in a great many chronic diseases it may be the only treatment necessary. It is well known that overweight people become short of breath readily on exertion. This is due to several factors, the most important of which are the effects of the excess weight on one's heart and circulation, the fatigue of muscles induced by carrying excessive burdens over and above the burden for which muscles were designed by nature, and the inability of overweight individuals to readily dispense with heat which accumulates in the body with exercise. Accompanied by a variety of symptoms associated with obesity are the frequent complaints of aching feet and on occasion swollen ankles, symptoms which of themselves

ought to be reason enough to seek the cure, that is weight reduction. It is interesting to speculate on the effects of distributing around the body fifty pounds of accessories and trying to do a day's work with those accessories hanging on. It is not difficult to imagine the fatigue that might result from such an experiment. Yet this is precisely what the overweight patient does each day without thinking a great deal about it.

The sum of the above statements is that obesity is undesirable, unattractive, unhealthy, and unnecessary. Therefore, one might ask what can be done about it. The rules are simple. Reduction ought to be attempted only under medical supervision. The reasons for the latter statement are as follows: rapid weight reduction is undesirable (1) because it is usually accompanied by fatigue and a sense of ill health; (2) because inadequate content of various types of food may be necessary for such reduction; and (3) because one may not have time to readjust eating habits during short course reduction regimes, thus accomplishes nothing in the long run.

What then is the course for one to pursue who seeks to reduce. He should first of all know that no associated disease is present, for example, heart disease, diabetes, or kidney disease, each condition which of itself requires certain attention. He should then be started on a diet designed to produce a weight loss of about four to six pounds a month. The diet should be well rounded, palatable, adequate in minerals and vitamins, and with not less than 150 grams of carbohydrate a day. At the same time a minimum of one gram of protein per kilogram of desired body weight is necessary and the fat content is usually appreciably reduced. Water may be used in any desired quantity since no calories are present in water. Alcohol, of course, contains considerable energy, (7 calories for each gram or 35 calories for each teaspoon) and is not allowed.

It is well to warn individuals who are planning to lose weight that such nostrums as are advertised in various popu-

lar magazines are in general dangerous as a form of treatment for obesity. Some of these compounds have been known to produce a type of blood disorder which produces death. Others have so depressed the bone marrow as to make emergency treatment necessary. Occasionally thyroid and such medication as amphetamine sulfate are used but should be used only under the supervision of a physician.

And finally he should be checked periodically to be certain that the desired results are being attained. With such gradual weight loss he should feel

well in a short time and should not feel the hunger that seems to bother so many patients who have tried more rigid regimes. (The pronoun *he* is used advisedly because it is well known that it would be statistically more accurate to use *she*!)

Eating properly is a trait much to be desired. For one who has had faulty eating habits over a period of years changing those habits will indeed require character. But there is much to be gained in health, even to the point of adding many years to one's life expectancy.

THE SANITARIAN*

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Introduction

Your planning committee has submitted three suggested topics from which to choose a title for this discussion:

1. "Ethics, Qualifications, and Responsibilities of the Sanitarian."
2. "The Sanitarian—His Qualifications, and Responsibilities."
3. "Professional Aspects of a Sanitarian."

It has been elected to utilize the authors privilege and cut across all three. In order to avoid limitation the title has been reduced to "The Sanitarian."

Certain questions immediately occur, such as who is he, what is he, what does he do, how does he do it, what does he need with which to do it, what does he accomplish, what recognition does he receive—as to compensation, and professional, where does he wish to go from here and what are the possibilities.

To understand what we have in the sanitarian of today and to appreciate the significance of the obstacles he still faces as well as the advances he has

made, it is helpful to look at some of the past history even at the hazard of lapsing into reminiscence.

Administrative health authorities as well as the public are inclined to be lulled into a feeling that we have arrived in Sanitation and become enamored of the newer and seemingly more appealing things in public health. Let us never forget however that sanitation is the wholesome bread and butter of public health while many other activities more popular for the moment are the frostings which sometimes even cause administrative indigestion when indulged in to excess.

Local health departments grew from local sanitation units. That was true in the large cities whose first activities, poorly conceived and directed as they were, nevertheless were aimed at environment. The history of the Yakima apples and early hookworm campaigns does not have to be recounted to this

*Address delivered at the Annual Interstate Sanitation Seminar which was attended by 325 men from Maryland, Virginia, West Virginia, South Carolina and North Carolina, the District of Columbia and United States Public Health Service at Blue Ridge Assembly, August, 1949.

group to remind you that county health departments grew from county sanitation units, staffed by a medical director and one or more sanitary inspectors. The work done by these pioneers was so impressive that the people wanted more of it, and these units expanded in their activities to the broader service. Curiously enough however, as the depression of the 30's progressed the number of sanitarians decreased until most county health units had no sanitarians.

This was the situation which existed in the early years of the depression. It continued until malaria control and sanitary privy projects began to take a prominent place in "made" work programs. Later in the approval of budgets for federal funds allotted to local health units, sanitation was accepted as one of the basic functions.

You will note use of the term "Sanitary inspector" in this discussion of the Sanitarian. The term means different things to different people yet today. There was a time when it was practically an insult. As many of you know city councils commonly relegated broken down spavin splinted worn out policemen to duty with health departments as sanitary inspectors. Local appropriations of health departments have frequently been obtained thru a promise to employ the county commissioner's nephew as sanitary inspector. One state well known for local health service still uses this device of throwing the politicians this one small piece of political red meat to forestall the demand for employment of some local worn out but politically acceptable physician as director. Obviously personnel of such origin rarely cast credit upon the position.

Recognizing the poor standing of the title, and not being versatile enough to coin a new name, it was undertaken here in North Carolina in 1919 and other states of this region especially, to bring dignity to the position thru the character of the work performed by the sanitary inspector. The qualifications sought in this state were age sufficient to provide maturity but sufficiently young for aggressive activity, good personality, integrity, honesty, de-

pendability, willingness to work, and the experience of salesman for something. The importance of this latter item lies in that sanitation must be sold. It necessitates dealing with people. With on the job training, direction, and backing, these men did raise the level of the sanitary inspector as did many similar men in other states. They were the backbone of public health in their time. and some of them are key men in sanitation even today.

What we talk about today under qualifications is a far cry from these qualifications. Yet we are forced to recognize that it was the work of such men in the earlier days of the developing health department practice that built the solid public health structures, resting upon the support of public opinion, in which we are able to sit today (sometimes in ivory towers I fear) and promulgate qualifications. More and more specificity of qualifications is of course obviously necessary and the character of the work requires more and more emphasis on technical knowledge, but we should not forget that it was the accomplishment of men that could not meet most of our present day qualifications who gave us the opportunity to write qualifications. They learned the hard way what we insist now that newly inducted personnel must know. They learned what we now need to teach sanitarians as training. They knew how to work with people.

Having just gone thru an election year and now located in a Republican state I sometimes "view with alarm" our growing tendency to surround ourselves with qualifications. We must not allow ourselves to build up a high level of qualifications for qualifications sake alone and lose sight of the fact that after all we should get some work done.

A few years ago the director of sanitation of a state where most of the local health units were manned with sanitarians either holding a degree in engineering or masters degree in public health asked me to undertake to determine what was wrong with the local sanitation activities. The answer was fairly easily found but most shocking to

the director and regarded as pure heresy on the part of a member of the staff of an educational institution. The answer was simply this, "Your sanitarians have too much education." Now don't understand that I underestimate the value of training. On the contrary it is basic to progress, orderly development, and quality performance. The point is they totally misconstrued what their advanced technical knowledge was supposed to do for them. They aspired to be pseudo health officers. They had white collaritis. They couldn't show a man how to do a thing because they were above doing it themselves. Training is intended to improve both the quality and quantity performance in sanitation. All training and all trainees should have this concept in mind.

Health administrators of the late thirties adopted a new term "Sanitarian." There is considerable variation of opinion as to what the term signifies. Some say it is a more dignified designation for the sanitary inspector. In fact it is frequently so used. Still others consider it a top title, first of all that it suggests an individual who is qualified with appropriate technical training, not only to do the job, but to do it understandingly, and work from the basic science involved to the solution of problems not listed in "the book."

Moreover it is increasingly suggested that sanitation should be understood to include all concern of the environment, that it includes sanitary engineering for instance, and does not just refer to non engineering interests. Under this view, sanitary engineers, sanitary chemists, bacteriologists, entomologists, and a long list of other groups, would all come under one general term sanitarian in making their respective contributions in sanitation. In this connection there are several states that have carried out reorganizations in which there is no longer a bureau of engineering but a Bureau of sanitation headed by a qualified broad gauge public health engineer in which there are appropriate sections, such as one devoted specifically to water supply and sewerage, another to food and milk sanitation, with specially

trained personnel appropriate to the activity in each section. In fact some universities have set up degree programs leading to the masters and doctorate degrees in "Sanitary science" for individuals who wish to pursue a highly specialized program of study of certain phases of sanitation. With due recognition of the need and place for specialists the fact that the sanitarian of the average department cannot be a specialist but must have a working knowledge of many things should not be overlooked. This is the area of training least satisfactorily served at this time. He must also know how to work with people.

In view of many there is still a place for the "Sanitary Inspector." A place, too, for a very high type person. Above all his action should be dependable. To do his job well he must know how to work with people and be thoroughly informed in the interpretation of the standards he is employed to administer. It is believed that the differentiation should be based on whether the performance involves special technical knowledge, capacity for technical analysis and guidance, responsibility for planning and development of activities to meet a need in the case of the sanitarian, or the reliable execution of inspection under competent technical supervision and guidance to determine conformity with regulations in the case of the inspector. A good health organization like a good ship requires a variety of personnel suited to the work to be done. Unquestionably broad gauge engineering direction is required at the state level and in the larger cities and other more populous or metropolitan type areas. The navy does not attempt to man ships by admirals alone, however, nor can a health department afford to do so.

What He Does

What the sanitarian does would take much space to enumerate, nor need it be detailed to this group. His duties and responsibilities have however multiplied and become more complex with the development of health practice. Keeping pace with a shifting need has necessitat-

ed increasing demands in his basic background to become a sanitarian and the necessity for special and inservice training. The "short courses" conducted by the University of North Carolina and other schools have made monumental contribution in filling in essential items of technical background.

The time was in this and neighboring states when the big and all consuming need in sanitation was the correction of insanitary disposal of excreta. As a matter of horse sense engineers and other state and local sanitarians devoted themselves during that period principally to maintaining safety of public water supply, promotion of new systems of water supply and sewerage and the temporary stop gap of sanitary privies where sewerage could not be secured. This action had the desired effect, well known to all of you in the almost complete disappearance of typhoid fever. Then in the late twenties the energies of these same workers began to be shifted to milk sanitation, food sanitation and in certain areas, to greater emphasis on malaria control, because these were the problems next in order of relative significance.

New knowledge and new techniques were required but the more experienced men here have long realized that the same basic approaches heretofore found successful could be used in new activities. The sanitarian works with the people and for the people. The people, their recognition of a problem and their cooperation in its solution are essential in the new activities as well as the old. The "four horsemen" of North Carolina and the "four horsemen" of Virginia like the Johnson Barfield twins of Tennessee, who earned their spurs in sanitary privy work, have distinguished themselves in their respective states in the way they developed and executed programs in milk sanitation, food sanitation and other fields.

The sanitarian does still more. In recent years in this area he has undertaken rodent control. In some areas he studies problems of garbage and refuse disposal and provides the stimulus and guidance in this field. Generally

throughout the country he has been making cross connection and back-syphonage surveys and getting something done directly or indirectly. In the larger cities he has also undertaken air pollution abatement to clear up excessive smoke and "smog." He has to be an authority on building illumination, ventilation and crowding, and the control of weeds that cause human discomforts such as hay fever. If he is smart he works with city and community planning committees. In the merry go round of new demands insistent pressure in housing is felt, and now it is being suggested that sanitarians lead off in home accident prevention.

With due regard to all these broader interest, the fact remains that the bed-rock of sanitation in any community is protection of water and milk supplies, waste disposal, food and food establishment sanitation, and insect and rodent control in certain areas.

It is obvious that he not only has to be an extremely well informed person, versatile and ambidextrous in action, but that there are not enough of him.

Emerson attempted to set standards for number of personnel in his A.P.H.A. committee report on "Health Units for the Nation." While we would be much better manned than we now are if we had the personnel his report suggests it is obvious that the basis he suggests fall far short of the need.

We are suffering today from a common practice of directors of local health administration working out a budget with the local officials for a medical director, X number of clerks, one nurse for each 5,000 population and one sanitarian. They haven't always gotten one nurse for each 5,000 population, but they had something authoritative to shoot at and on the whole have come nearer reaching the goal in nursing personnel than we have in reaching any goal for sanitation personnel for we have had none. The fault is ours. The nurses studied their problem and provided some guides to administrators, backed up by an impressive analysis of comprehensive data.

There is hope, however. Several ex-

ploratory efforts have been made. While there are no doubt many studies underway, I am familiar with a few of them. Happily these and other isolated efforts have helped to provide the plan of a study being undertaken by the engineering section of A.P.H.A. It is expected that in the near future you will be asked to contribute in some way to this study. For your own benefit as well as for advancement of the study, I bespeak your hearty cooperation. May I say in passing that the willingness of the section to embark on such an activity is largely accounted for by the broader interest of the section and its determination to serve the needs of all workers in sanitation adopted at the Cleveland meeting in 1946.

And finally the competent sanitarian does not necessarily do all these things himself. It is true that some other governmental agency operates the sanitary utilities, maybe a building inspection department does plumbing inspection and of course the department of education manages the schools, but it is the obligation of the sanitarian to accomplish observance of appropriate sanitation needs. As to how it is done depends upon his ingenuity, ability and resourcefulness. It is again a case of dealing with people.

What He Needs To Work With

Some of the things he needs to do all of this, have been mentioned. Foremost of course, is appropriate and adequate knowledge of the technical considerations and practical aspects of the problems encountered, which involves training, to which educators and administrators are devoting diligent study. Adequate technical knowledge has about the same significance as the cake of yeast used in a mixture of flour and water. Without the yeast the bread does not "rise." Without the technical knowledge the sanitarian may thresh around aimlessly, but technical knowledge alone does not assure performance. Framers of merit systems have attempted to reflect these needs in qualifications.

He needs some other things though that can not be guaranteed by merit

system stipulations nor by any degree of technical knowledge. He must be willing to work, hard and long. He can not observe union hours or the N.R.A. five day week and get anything accomplished. We have arrived where we are as a result of the devoted efforts of men who believed in what they were doing and applied themselves with a missionary spirit. As C. C. Applewhite says, "A sanitarian is no good unless he has the foolish glimmer in his eyes." He needs these personal attributes together with personality, good judgement, character above reproach, the ability and will to teach, and the capacity of leadership. More than any other member of the health department he must be at home in all social and technical levels. His work requires him to meet business and professional people on their own level, and at the same time that he be able to wear a pair of overalls gracefully, "chaw tobacco" with a relish and have the dexterity to hit a fly at ten paces. What I mean is he has to acquire and maintain the confidence and respect of all people in all levels, thru channels they understand. More people have their only contact with the health department thru the sanitarian than any other member of the staff. The standing of the health department is therefore largely in his hands. One other indispensable need, but which is beyond his control is the interested and understanding council, and unfailing backing of the director.

Moreover he needs from an appropriate agency in the state health department—preferably the division of sanitation—technical guidance, assistance, counsel, aggressive leadership, condolence on occasion, alert watchfulness as to his professional and individual welfare and advancement, in short evidence that somebody does love him after all, recognizes his good deeds as well as his shortcomings and will help him over the tough spots.

What He Has Accomplished

What he has accomplished is spectacular, particularly in these states where typhoid fever and the other intestinal

diseases were major health problems in the memory of all of us. What he accomplishes from now on is no less important but much more difficult to evaluate. In a rapidly descending typhoid curve the accomplishment of sanitation is easily shown. Other indices will have to be determined. What is too frequently overlooked is that relaxation in any phase of sanitation may cause a reoccurrence of disease brought under control. Mere maintenance of ground gained may be more important in some areas of concern than measurable advances in certain other areas.

Why should we get so excited over geriatrics anyway? Everybody has to die some time. One significant reason we see such high rates of heart disease today is because we have done such a good job in sanitation that vast numbers have survived the old epidemic conditions and have lived on to an advanced age and become heart failures.

Just as effective sanitation has contributed a larger old age group it has been the basic element in paving the way for full scale health organization that now undertakes to deal with this wider range of problems.

Sanitation, interpreted as measures of control of man's environment, however, must go far beyond communicable disease control into general comfort and safety, which will require additional means of measurement of accomplishment.

Having looked at this individual and concluded, from the requirements set out for him to fulfill, that he must be some kind of a superman, moreover having modestly acquiesced in the appraisal of the contribution he has made to the public health and the welfare of mankind, it might be assumed that he enjoys a measure of appreciation, recognition and esteem to which all would wish to aspire.

Unless health officers in this area are different than average, and unless conditions in this and neighboring states have materially changed since the early thirties, he probably is the fellow the director sends out to put up quarantine signs, that serves as dog catcher in

rabies season, and is dispatched on all manner of nuisances and runs the errands for the department. If he must do all of these things and still can do the creative and constructive work laid out for him in his spare time he must be a super type of man, greater even than "mighty mouse" himself.

Recognition

Compensation

A look at the compensation, improved as it is since the war years, but compared to other responsible positions is often deflating. The old idea of using just anybody, probably to pay off a political debt, or employment of the mayor's cousin to secure support for the appropriation, has had a tremendous effect in holding down the salary scale. While I fervently hope for material advance on this point, I do not believe it should or can be attained through union tactics. Although certain political elements and others disregard the law of supply and demand, it is believed that when the supply is capable efficient work, it will be in demand, and eventually compensated accordingly. This necessitates aggressive action on the part of the state agencies supervising local health work and in control of the funds for participation in local health department budgets. Moreover, it necessitates aggressive action on the part of the health officer, which cannot be expected to precede demonstration of value of service but may be expected to follow such demonstration in some measure.

Professional

Professionally sanitarians have been in the dog house, largely because neither they nor anyone else knew just what they were or should be. With the development of qualification standards the picture is somewhat clarified.

There have been several attempts at organization on the national scale. These have served some useful purposes, mostly on a local or area basis, however, but have not fully met the need so far as development of professional identity or furnishing a vehicle for expression, and advancement on a national scale are concerned.

If it were not for the health department federal, state, and local, there would be no sanitarians. They are part of the health department organization. What affects other units of the health department frequently impinges on their own interests as well. They are a unit of a total profession which is public health. The only organization which serves this profession exclusively is the American Public Health Association.

Granted that for many years sanitarians did not enjoy the privilege of the sanctuary this organization provided, that condition is now corrected.

Individuals and organized groups of sanitarians made application to the association for recognition in full membership status of "fellow", which carries the right to vote, hold office and other prerogatives.

First of all they were denied a separate and additional section, which was no doubt wise policy. The only existing section where there interests could possibly and obviously should lie was the engineering section. Sanitarians who were members but not "Fellows," made application for status of "fellow" and assignment to the engineering section. One at least was made a fellow but not admitted to the engineering section because it was then erroneously understood that he must be an engineer to become a "Fellow" in that section. He did, however, become affiliated with the education section.

About a dozen members of the engineering section got together around three years ago and set out to:

1. Get the "Fellow" requirements changed so that qualified sanitarians who are not engineers could have full "Fellow" status as well as membership in the engineering section

2. Broaden the scope of interest and activity of the engineering section to serve the technical and socio-professional interests of workers in all phases of sanitation, and

3. Change the name of the section if necessary.

It soon developed that the first obstacle did not exist. Under long standing rules of the association any public

health worker who meets the association's requirements for "Fellow" may become a fellow and may become affiliated with the section wherein his major interest lies. The mistake was in the prevailing misunderstanding of the association's provisions as to "Fellows."

At the Cleveland meeting of the A.P.H.A. opening the membership of Fellow in the section to sanitarians other than engineers and broadening the activities and interests of the section were given extensive discussion, and resounding affirmative action.

There is, therefore, a definite professional home for sanitarians in the A.P.H.A. Of course, not all sanitarians are eligible for "Fellow" in the A.P.H.A., but a great many are eligible who have not yet made application for admission to "Fellow" and assignment to the section. Those who are eligible should make application and when affirmed take an active part in the affairs of the engineering section, for their own benefit and furtherance of the interests of sanitation and all engaged in such work.

It is hoped that the time will come when sanitation sections of state public health associations will have official representation on engineering section council as the affiliated state public health association now has on the governing council of A.P.H.A.

In the meantime each state sanitation has been asked to name a representative to be appointed by the chairman of the section to membership of an advisory policy committee composed of such representatives. Working with this committee, section council is overhauling its program and outlook to the end of serving adequately all types of sanitation interest and personnel.

The establishment of regular corps and reserve commission status for sanitarians in the Public Health service is an important step in helping to fix the status of the sanitarian professionally.

Future Possibilities

The National Sanitation Foundation, to be discussed later, is an instrument that has almost unlimited possibilities for advancing the interests of sanitation,

and it naturally follows the interests of those engaged in sanitation work. Moreover it offers the possibility of focusing public attention on sanitation to the extent that the sanitarian will enjoy much more recognition than he has heretofore received.

The U.S.P.H.S. has greatly augmented resources for sanitation. The impact of these additional resources should be felt all along the line.

About 1916 and in the immediate years thereafter, the Service took its first steps away from a cloistered hospital service into the Public Health unknown through sanitation. Altho it has now traveled far into other areas of public health, this might be an opportune time for spotlighting sanitation again.

No matter how much one may disagree with the Emerson report, it has had an influence and marks a trend toward more adequate and better qualified personnel for sanitation. As the demand for additional sanitarians grows, more top positions develop to which qualified individuals with demonstrated ability may expect to advance.

The development of qualification standards through merit systems and the work of committees of professional organizations and the development of training facilities help to insure that those who have earned the right to serve in better paid positions involving supervision, the exercise of special skills, and important responsibility will have a chance to do so.

Moreover the increasing demand for sanitarians in industry provides a growing opportunity for financial recognition. As industry becomes better informed regarding the values of such services, through their association with public health people and study of health phases of their own problem, as those who are sponsors of the National Sanitation Foundation are doing, more and more opportunities for employment in industry will occur.

Summary

The sanitarian has qualified himself by training and experience for service to the public. His activities are basic and essential. He has earned, but has not always received, a large measure of the credit for the increasingly favorable position of public health. In addition to a wide variety of qualifications he needs better facilities for training and self development, together with the unflinching backing of his superiors to carry out his responsibilities. His financial compensation is improving and it is believed will continue to do so as his function is better understood and he succeeds in improving the calibre of his contribution. All good sanitarians, however, have had to depend on the personal satisfaction that comes from knowledge of a job well done as a partial compensation, and will probably have to continue to do so.

The first real break in professional recognition has occurred. What the future holds depends very much upon how he measures up to the responsibilities that these new privileges impose.

THE ROANOKE MILL CAFETERIAS

By

MISS MARY BRICE DEAVER
Nutrition Consultant
State Board of Health

In keeping with the latest beliefs that only well nourished persons are capable of putting their best efforts into their work, the Roanoke Mills are continuing to make it possible for their employees

to obtain good food at minimum cost. These mills are located in Roanoke Rapids, North Carolina and employ approximately 1900 people. By operating non-profit cafeterias at each of the



three mills, the company is offering appetizing, well-prepared meals to all employees. Not only may any of the employees eat there, but any members of the employees' families are entitled to the same privilege.

During the war, one heard comments on every side about nutrition in industry and indeed it was probably largely due to the efforts started then, that we know as much as we do now about the effect of food in regard to the work one can do. For it was pointed out forcibly at that critical time when every possible effort was being made to bring production to its peak that health was a primary factor in working at maximum efficiency.

Obviously good health and good nutrition go hand in hand. It would be a shame to let such knowledge be forgotten and not used in time of peace. For isn't it essential at all times for

one to be in a state of well-being if he is to do good work? The fact that poor food habits may mean more sick days taken and less work done applies equally as well as it did in 1942.

We are fortunate in having an excellent example of these principles being put into practice in Roanoke Rapids. The cafeterias were opened in 1944 and have been operating continuously since that time. Under the able supervision of Miss Lydia Deyton, the three cafeterias offer meals for each of the several shifts at the plant. Miss Deyton, the supervising dietitian, has been on the job for the past two years and is eminently well qualified to hold this difficult position. She is responsible for each cafeteria running smoothly and efficiently, does the buying of all food and supplies for them, plans the menus, is responsible for keeping the necessary records, is responsible for hiring and training



personnel to operate the cafeterias. In spite of her heavy duties finds time to be a pleasant and charming hostess.

Each cafeteria has a supervisor who is in charge of meal service and who usually serves as cashier as well. Other personnel employed such as cooks, counter girls and dishwashers work under the direction of the supervisor in each case. All personnel are required to wear uniforms and hairnets, in keeping with general regulations for cleanliness.

The dining rooms are in pink and gray and present a soothing, restful atmosphere. Each table seats six persons, and at no time during the serving hours are there more people than can be taken care of comfortably. This means that the usual rush for seats in a cafeteria is lacking, and everyone takes time to get the food he wants, sits down, and enjoys eating it. The tables are kept cleared of dirty dishes so there is

never an unsightly collection of used dishes to detract from one's eating pleasure. The counter itself is set up attractively and kept replenished with food at all times.

Since the steam tables are in the center of the counter, the salads and desserts are reached first, then the cold beverages such as milk and iced tea, then the hot foods, followed by the bread with the coffee urns at the end. As the counter is not long, it is not difficult to see the hot foods offered before taking salads and desserts and to plan one's meal accordingly.

In the kitchen, equipment, while not elaborate is certainly adequate. However, in some cases where buildings meant for other purposes have been converted to this use, the most convenient arrangement of equipment has had to give way to other considerations. It is hoped that in time some of these

inconveniences may be remedied, making more effective working areas.

With these points in mind, let us look at a typical day in a cafeteria. In the early morning, for those who have had to leave home without eating breakfast; milk, fruit juice, coffee, and sandwiches are available. True, these do not constitute an ideal breakfast, but certainly some of these things would help carry one through the morning's work. Breakfast, actually, is one of the most important meals of the day, and statistics show that carelessness leading to accidents as well as a tendency to slow down on the job and make mistakes often tie in with whether one has had adequate nourishment to begin the day. Breakfast is the most commonly neglected of all meals and skipping it means that the person may have had nothing to eat for a period of twelve or more hours.

During mid-morning and mid-afternoon when the cafeteria lines are not open, there are snacks and drinks available through what is known as "store service." These are not meant to take the place of the hot meals offered at noon and night but simply as a refreshment during the working period. About 11:30 A.M., the lines open for the lunch period. At this time a variety of salads and desserts are offered as well as a hot plate consisting of a main dish and two vegetables. There are several vegetables available, and one may choose those preferred. Soup is there in case anyone doesn't want meat, or he may choose a vegetable plate. During the afternoon, "store service" again takes over and about 5:30, the night meal is served, very similar in respect to the foods offered at noon but the particular foods such as vegetables and meats are always different. From 8:00 P. M. to midnight, beverages and sandwiches are available though there is no hot meal served during the night. Any employee may buy a meal and take it home to his family if he wishes. With these meals ready and waiting, the next question is—how well are the cafeterias being patronized? Surprisingly enough, the answer is that only from 20 to 25 percent of the employees are

using the cafeterias. This fact seems even more strange since the cost of food in the cafeteria is kept at a minimum. It is really hard to understand why there is not greater patronage. Perhaps many do not realize exactly what the cafeteria represents, for it is purely voluntary whether one eats there or not; there is no urging nor advertising done to get more patronage.

But what about the people who are eating here? Are they taking full advantage of the opportunity to eat the protective foods so necessary to all of us? Are they spending their money in the best way for them? Recently, a week was spent in the cafeterias at the noon meal, checking the food purchased by each person. Perhaps you would be interested in what a summary of those findings indicates. Less than 10 percent of the total number served were buying milk; less than 20 percent bought a green or yellow vegetable; about 15 percent bought a raw vegetable; approximately 90 percent bought meat; around 16 percent fruit; and about 65 percent bought vegetables other than the green or yellow ones. What do these figures show? According to the basic seven chart, which was started by the government during the war as an easy means of checking food requirements, several of the foods we need every day are apparently being neglected by a majority of the people. Perhaps they're getting them at some other meal? True, that's quite possible, but when one has put in a full day working in the mill, how many are going home and prepare a meal which will meet the rest of the nutritional requirements for that day? Most of us would be inclined to prepare something quickly without much thought or time being spent on it. Certainly, we cannot say that it is a fact that these people are not meeting their daily food requirements on the basis of only one meal a day checked; but we can say here is an opportunity to go a long way toward being adequately nourished with a minimum of effort and cost.

Here, then, we can see a practical application of the theory surrounding

nutrition in industry. It would also seem that making food available is not enough; it is just as necessary to carry on an educational program in conjunction with the food program if the facilities provided are to be utilized to the greatest advantage. It is certainly grati-

fying to know that such efforts to put good nutrition into practice are being carried on in many industrial concerns, and the Roanoke Mills may well be proud that they have gone so far in this new field.

NOTES & COMMENT

By

ACTING EDITOR

OUR FRONT COVER—When we received the Arkansas Health Bulletin for July, 1949, we saw a front cover which impressed us and which we thought would render a most useful service in North Carolina. We wrote to the Editor and requested permission to reproduce that front cover on the front cover of our own Health Bulletin. The permission was promptly given and they kindly sent us a glossy print from which to have our own cut made. Since we have already killed more than 600 people and injured more than 6000 on our highways, so far this year we should have no difficulty in understanding the plea presented. Our thanks go to Little Jimmy Underwood of Benton, Arkansas and the Griffith Monument Company of Little Rock.

NEW MEDICAL DICTIONARY—To one who found Gould's Medical Dictionary most helpful in his efforts to secure the M. D. some 35 years ago, the announcement of Blakiston's New Gould Medical Dictionary could not but arouse interest and carry memories back to the days of his youth. The examination of this book is most convincing that it is new and not just a revision of Gould's Medical Dictionary. It is as new as "aureomycin" and as complete as nearly any one could desire who might be content with a dictionary which is underneath two covers instead of in two or more volumes. The editors are Harold Wellington Jones, M. D., Washington, D. C.; Normand L. Hoerr, M. D., Cleveland, Ohio; and Arthur Osol, Ph.D., Philadelphia, Pa. They were assisted by an Editorial Board of 80 contributors whose names read like a digest of Who's Who in Science. "Time" Magazine is

authority for the statement that Blakiston's New Gould Medical Dictionary took five years to prepare and cost \$287,000. With a background of this sort one would expect an outstanding good dictionary. Our own expectation did not lead to disappointment.

From the preface we are informed that the Editors and the Board of Consultants—"searched recent professional literature not only for new terms but also for evidence of the changes in usage which they felt were evident today and so inadequately recorded in older reference works. More than three hundred standard modern texts reflecting current usage and nomenclature in all the basic fields of medicine, surgery, and the biologic sciences as well as the recognized journals, yearbooks, and standard indexes of many specialties were critically and systematically examined.

Such an investigation was, of course, a task far beyond the capacities of one editor or of a small group of editors.—

The user of this dictionary will readily recognize the advantages of this board investigation."

Particularly pleasing is the method by which pronunciation is indicated. With this idea we should have much more uniform pronunciation of our medical vocabulary. Most of the illustrations, 252, are located near the center of the book; —129 are in color. In printing a style of type has been used which is easy to read. There is an index of tables and lists. The appendix of 140 pages carries a wealth of information in readily accessible form. The Blakiston's New Gould Medical Dictionary consists of 1294 pages and 5½ pounds, of information for \$8.50.



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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	German Measles	Sanitary Privies
Appendicitis	Health Education	Scabies
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Epilepsy, Insanity, Feeble-mindedness, Mental Health and Habit Training

SPECIAL LITERATURE ON MATERNITY AND INFANCY

The following special literature on the subjects listed below will be sent free to any citizen of the State on request to the State Board of Health, Raleigh, N. C.

Prenatal Care.	Baby's Daily Schedule.
Prenatal Letters (series of nine monthly letters).	First Four Months.
The Expectant Mother.	Five and Six Months.
Infant Care.	Seven and Eight Months.
The Prevention of Infantile Diarrhea.	Nine Months to One Year.
Breast Feeding.	One to Two Years.
Table of Heights and Weights.	Two to Six Years.
	Instructions for North Carolina Midwives.

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TUBERCULOSIS CONTROL IN NORTH CAROLINA WITH EMPHASIS ON CASE FINDING

By WILLIAM A. SMITH, M. D.

State Board of Health, Raleigh, N. C.

General

It may be said that concerted measures to control tuberculosis in North Carolina began in 1904, when, during a meeting of the State Medical Society, Dr. Lewis then State Health Officer announced in his report that tuberculosis was a real menace to the welfare of the State.

Shortly afterwards the Legislature appropriated money for the construction of a State Sanatorium for the treatment of tuberculosis alone. Since that time there has been a steady interest in the control of this disease and at this time there are 3 state sanatoria, which are being expanded, and in addition there are 15 county sanatoria. There are also five other tuberculosis hospitals operated by other than State or County Governments.

In 1904 the death rate of tuberculosis, all forms, in the United States was 202 per 100,000 population; over 150,000 people dying on account of this disease in a population of 76,000,000 persons, and in 1947 the death rate was 33.5 per 100,000 persons and 48,000 died on account of the disease.

Tuberculosis Control measures include several services and agencies. Services include:

- a. Case finding
- b. Clinical services
- c. Nursing services
- d. Hospital services
- e. Health Education
- f. Laboratory services
- g. Rehabilitation
- h. Vital statistics
- i. Welfare services

In the general organization of our State Government, there are 4 State agencies which have to do with tuberculosis control. These are:

- a. Department of Public Instruction
- b. State Board of Public Welfare
- c. Sanatoria Board
- d. State Board of Health

The Division of Vocational Rehabilitation is an agency in the Department of Public Instruction, and is responsible for training the tuberculosis patient after his discharge from Hospital.

The State Board of Public Welfare protects the patient's family against economic distress by cooperation with local County Welfare Agencies.

The Sanatoria Board controls the 3 State Sanatoria and at this time the Central Sanatorium and Tuberculosis Division cooperate in surveys, the Sanatorium furnishing the final diagnosis with recommendations as to further treatment, and the Tuberculosis Con-

trol Division conducting the x-ray surveys of the population. The Sanatoria, in addition to the regular hospitalization of the tuberculosis patient, maintain a consultant service, controls streptomycin allocation, and furnishes free tuberculin to local Health Units and physicians.

In the general Tuberculosis control set-up, the State Board of Health controls:

- a. The Division of Local Health Administration
- b. Division of Vital Statistics and Epidemiology
- c. State Laboratory of Hygiene
- d. Division of Tuberculosis Control

The responsibilities of these divisions are:

- a. Local Health Administration
 1. Liaison and cooperation with County Health Units
 2. Periodic inspection and report on tuberculosis registers by a field representative
 3. Health education
 4. Consultant nursing service
 5. Maintaining a film library
- b. The Division of Vital Statistics and Epidemiology maintains morbidity statistics and other required records on reportable diseases.
- c. The State Laboratory of Hygiene furnishes free laboratory service to County Health Units, also to the State Sanatoria and private physicians.
- d. The Division of Tuberculosis Control, in general has the following responsibilities:
 1. Conducts mass chest x-ray surveys of the general population and industry through County Health Officers.
 2. Maintains consultants nursing service.
 3. Health education in connection with publicity prior to and during surveys and maintains liaison with:
 - a. State institutions for better case finding, and with
 - b. The Director State Sanatoria and the
 - c. State Tuberculosis Association.

The Division of Tuberculosis Control,

therefore is strictly an administrative service agency, and clinical services are a duty of the State Sanatoria and Local Health Departments.

The principal duty of the Division is conducting Mass Chest X-Ray surveys, and such surveys, as a case finding procedure, has been termed by one of our top Public Health Administrators, as the "spearhead of the attack on tuberculosis." It must be remembered, however, that once the attack has been made, the ground won must be consolidated and held by agencies in the local area. There must be an adequate follow-up, clinical services, nursing service and hospitalization, before a general survey of a community can be termed as having been successful.

Taking 20,000-30,000 x-ray pictures, the interpretation, final diagnosis with recommendations as to future treatment is but the beginning; final success depends on the ability of local agencies to either hospitalize the patient or give him proper advice as well as to continue observation.

Mass Chest X-ray surveys have come under criticism by many persons and authorities. This case finding procedure has been studied thoroughly by many tuberculosis specialists. To quote one well known authority, "For the economical recognition of tuberculosis in its early stages, routine chest x-rays of groups carefully selected for probable incidence is the most effective method yet developed. From the standpoint of case finding, the shift of age distribution of tuberculosis mortality means that greater emphasis must be placed on the examination of adult contacts and on mass examination of groups subject to the highest risks, such as workers in hazardous industries and the lower income groups."

History

North Carolina was one of the first states to practice tuberculosis control in cooperation with the U. S. Public Health Service. Dr. Reynolds, former State Health Officer, and the late Dr. McCain recognized the value of case finding through community mass x-ray surveys and in 1944 plans were com-

pleted for the organization of a separate division for tuberculosis control in the State Health Department. The function of this department would be primarily that of case finding, and hence organized on somewhat different lines from that of many other states in that all administrative or professional services concerned with tuberculosis control were not represented in the Division.

In the early days of the organization there was the usual difficulty in securing equipment and personnel and for a time it was necessary to combine with the Division of Industrial Hygiene. However, by early 1948 there were 5 complete mobile units operating. For the first 2 years or until February 1947 the U. S. Public Health Service furnished the majority of personnel and equipment. At that time the U. S. Public Health recalled all personnel except one doctor and since May 1948, when this doctor left, the Division has used its own personnel and equipment. The equipment consists of 8 mobile x-ray units, 2 generators, 1 G. E. 200 MA unit installed at Duke Hospital for routine chest x-rays of in-patients and out-patients; and also tractors and other necessary accessories. Personnel consists of 2 doctors, 2 health educators, 1 part time consultant nurse, 6 senior x-ray technicians, 9 photofluorographic operators and trainees and 7 other personnel in the office and field or a total of 20 persons in the field and 6 persons in the central office and one clerk at the Central Sanatorium. There are no doctors for field duty, all 70 mm films are read at the central office and 14 x 17 films at the Central Tuberculosis Sanatorium at McCain.

BUDGET—The 1949-1950 budget is \$308,000 and of this amount \$100,000 is allotted to Local Health Departments, the remainder being used for salaries and equipment in the Division and also for salaries in other Divisions within the Board of Health and State Sanatorium who perform work in connection with Tuberculosis Control, such as in the Division of Vital Statistics, Laboratory of Hygiene and Division of Local Health Administration. No funds are used for

salaries outside the State Board of Health and local Health Departments with the exception of the salary of the clerk at the Central Sanatorium whose duties are concerned with follow-up activities.

Morbidity, Mortality

In North Carolina it is estimated that about 10,000 persons have tuberculosis in some form. In 1920 the death rate from tuberculosis all forms was 117.4 and the national average was 114.2. In 1946 the national death rate was 36.4 and the North Carolina death rate was 32.5. In 1947 our death rate was 28.4, a total 1,056 people dying of the disease: 411 white, 645 negro; the national rate was 33.5 with 48,064 deaths; in 1948 deaths in North Carolina were 956 with a death rate of 25.6. The incidence in North Carolina has fallen below the national average; the disease however is with us and a health problem above automobile accidents and Diabetes and 8th on the list of causes of death. In 1920 it was 2nd on the list and was the leading cause of death in 1917.

Although the death rate from Tuberculosis in North Carolina has declined from 117.4 per 100,000 in 1920 to 25.6 in 1948, we must not lose sight of the fact that the number of new cases in the State has increased in the last five years from 1,633 in 1943 to 3,591 in 1947, and 3,274 in 1948, all forms of tuberculosis, and during the same period the number of deaths decreased from 1,468 to 956. It is also interesting to know that during 1948 there were 620 minimal, 1015 moderately advanced and 1052 far advanced cases of pulmonary tuberculosis diagnosed by physicians for the first time, and 131 cases, stage not specified. During the same period on mass x-ray survey there were found 409 minimal cases, 469 moderately advanced and 128 far advanced cases of tuberculosis of the lung. These cases are included in the 3,274 new cases just noted, and it may be assumed that most of these cases were unknown prior to the survey since known cases of tuberculosis are not encouraged to come to our unit for x-ray. Hence many cases were up and

about while in the contagious state. In a recent survey, in which 31,563 70 mm. films were taken, there were 24 cases of tuberculosis who were advised to have Sanatorium treatment, 17 of these were negro. In addition there were 11 questionable cases and two possible lung cancers, all (except one) new cases of tuberculosis.

In one of the most populous areas in the United States over 5 year period, over 4,000 cases were discovered at death, which meant that these persons had been walking the streets and spreading the disease. The same report shows that among the new cases of tuberculosis, diagnosed for the first time in 1947 31% were in the minimal stage, 38% moderately advanced and 31% far advanced. These figures prove that tuberculosis, although not the main killer is still a menace and unless continual effort is being made to control the disease, there is a possibility that the death rate might increase. In the United States in 1947 the new cases, however, have risen to one of the highest numbers recorded in years namely 133,837 which was 15,000 more than the year before. It is to be remembered, however, that in this country there has been an intensification of case finding through mass x-ray surveys. Such intensification of mass x-ray surveys, however, did not begin in North Carolina until 1946-1947, and during the three previous years 1943-1945 there were 5,658 new cases. The rise in the rate may not necessarily mean an increase in the incidence of tuberculosis but a broader knowledge as to its prevalence. While the death rate may be leveling off or decreasing, mere growth of population alone brings it's additional problems.

In North Carolina x-ray surveys representing 165,000 persons of selected eastern and western counties are of considerable interest. Counties in the east surveyed were Beaufort, Craven, Duplin, Hyde, Tyrrell, and Washington, and those counties which were surveyed in the west were Cabarrus, Guilford, and Rowan.

In the east, according to the survey, it was found that tuberculosis is far

more prevalent than in the west. The high eastern rate cannot be attributed to the high non-white rate because curiously enough the non-white rate was lower than for the white. In all probability this was due to the fact that non-white individuals x-rayed did not constitute a representative sample of the population. The white rate in the east was 171.9 and in the west it was 55.3. The non-white rate in the east was 114.8 and in the west was 38.3.

The total number of tuberculosis cases found per 10,000 persons x-rayed was 148.7 in the east and 52.4 in the west.

Rate per 10,000 Films 70 mm.

	Total	White	Non-white
East	148.7	171.9	114.8
West	52.4	55.3	38.3

Tuberculosis rates in industry and in agriculture are also of considerable interest. Our figures in industry represent principally the textile industry. The survey of industrial occupation shows the rate to be 62.3 cases per 10,000 films. The agricultural rate is 168.1. These figures include both white and non-white. Broken down the white rate in industry is 65.0 and the non-white rate is 36.9. In agriculture the white rate is 204.6 and the colored rate 121.4. From these figures it is seen that in every 10,000 persons x-rayed there were 139.6 more white farmers who had tuberculosis than industrial workers, and there were 84.5 more non-white farmers in every 10,000 persons surveyed who had tuberculosis than non-white industrial workers.

Tuberculosis Cases per 10,000 film 70 mm.

	Total	White	Non-white
Industrial occupation	62.3	65	36.9
Agricultural "	168.1	204.6	121.4

Case Finding Procedure

Our case finding procedures on mass x-ray surveys consist of:

- Certain preliminary activities prior to the arrival of the mobile units.
- Operation of the mobile units in the area, and
- Furnishing the Health Officer with the final diagnosis and recom-

mentations as to management of the case.

In the preliminary activities, two conferences are desirable in the area where the survey is scheduled. The first conference is held 4 to 6 months prior to the survey and the second conference 2 to 3 months before the units enter the area. At the first conference the Division Director meets with the:

- a. Local health officer and his staff.
- b. A representative of the local Tuberculosis Association.
- c. A member of the county commissioners.
- d. Member or members of the local medical society.
- e. Members of the Board of Health.
- f. Member of the school board.
- g. Local Power Co. representatives, and
- h. Other interested persons.

At this conference our policies governing tuberculosis surveys are read in detail and each item examined. Such a conference generally lasts about 1 hr. and a half, and is followed by a survey of the health department facilities. We endeavor to have the 2nd conference approximately 2 months prior to the survey and this is attended by the division director, a health educator, chief technician and the consultant nurse, all from the State Board of Health. Locally the same persons attend who were present at the first conference and generally there are a larger number.

Following the conference the chief technician makes a preliminary survey of sites and tentative locations of units, electrical connections, roads, bridges and other matters pertaining to the operation of mobile x-ray units.

The health educator begins activities about this time and the consultant nurse is available to the nursing staff.

Survey of a County Or District

Our surveys generally require 5 units operating simultaneously with one unit in reserve. During a full month of operation without interruption these units make 25,000 to 30,000 70 mm. films.

The 70 mm. films are read at the Central Office in Raleigh and all reports

of pathology are forwarded to our record analyst at the Health Center where the survey is being conducted. Persons who require the 14x17 plate are informed as to the date and hour they should report for further x-ray studies. The plate is developed at the **Health Center** and forwarded to the Central Sanatorium for interpretation. The Central Sanatorium in turn forwards the diagnosis to the Health Officer who furnishes it to the doctor or the patient. The Central Sanatorium in addition to the diagnosis makes recommendations to the Health Officer as to sputa examination, intervals for further x-ray examination, whether hospitalization is indicated and all other information pertinent to the case.

When the regular schedule in the area, which is being surveyed, has been completed and the mobile units moved to the next area, one mobile unit, a technician and a clerk remain in the area under the supervision of the Local Health Officer for the purpose of continuing the 14x17 clinics and also for taking those unsatisfactory 70 mm. plates which still remain untaken within the area. It has not been necessary in every survey to retain the mobile unit throughout the time required for the 14x17 retakes. The unit is released for duty to the current survey but the technician and clerk remain until released by the Health Officer.

In a recent survey, 30,270 70 mm. films were made and a total of 624 people were recalled for re-examination, and of these all returned to the clinic. There was a total of 172 cases diagnosed as re-infection tuberculosis, classified as follows:

Pulmonary scar	46
Minimal Tuberculosis	64
Mod. Advanced Tuberculosis	50
Far Advanced Tuberculosis	12

Of the above cases, twenty-three were advised to have sanatorium care and it was recommended that one ex-patient, and ex-service man return to Oteen, N. C. for treatment. Cases of questionable activity were recommended for sputum specimens, tuberculin tests and rechecks to determine activity.

Continual study is being made to improve the method of follow-up activities. Since September, 1948, we have employed 3 additional clerks for field duty.

Summary

Since the organization of this Division mass x-ray surveys have been conducted in counties, the total population of which was approximately 1,900,000 persons and over 800,000 70 mm. pictures have been made. 42 counties have been surveyed and in other localities special surveys were conducted among industry, colleges, food handlers and special groups.

In some counties between 80-90% of

the x-rayable population were x-rayed; in others a much lower percentage.

The number of pictures taken, however, is not an index as to the actual benefit to the community, for a mass chest survey is a general educational feature, and much knowledge concerning tuberculosis is disseminated.

During 1948, 243,695 chest pictures were made and 1614 persons were diagnosed as having definite tuberculosis or 0.66% of those x-rayed, and over 1600 persons showed "other chest pathology." There were, therefore, 3228 persons discovered during the year by this Division who required some sort of treatment or advice by a physician.

PUTTING TUBERCULOSIS TO FLIGHT

FRANK W. WEBSTER, *Executive Secretary*

North Carolina Tuberculosis Association

215 Commercial Building, Raleigh, North Carolina

A dove in flight pictured on the 1949 Christmas Seal symbolizes, in addition to the traditional peace of the holiday season, the putting to flight of tuberculosis.

It cannot be denied that progress has been made. If the death rate from tuberculosis had continued at the rate it was in 1904, when the National Tuberculosis Association was organized, 5,000,000 more people would have died of tuberculosis than actually have. Thus, the lives of some 5,000,000 persons have been saved who would have died from tuberculosis in the past 45 years. In 1915 the death rate from tuberculosis in North Carolina was 156.4 per 100,000 persons and in 1948 it was 23.9. A low estimate of the cost to the community of each individual who dies from tuberculosis is \$3,000. The reduction in the death rate as the result of the efforts already made to control the disease have resulted in an annual saving in the State of more than 4,900 lives and of more than \$14,000,000. Tuberculosis Associations, however, do not claim sole credit for this progress. It is the result of cooperative efforts of many agencies.

Cause for pride? Perhaps, but how does the other side of the picture look? A communicable disease, caused by a germ, preventable, tuberculosis is killing 1,000 Americans a week, 125 persons a day—at the rate of one person every 11 minutes. Tuberculosis is the only germ-borne disease that is still a leading cause of death. In this country it causes one out of every 30 deaths. Of every 12 deaths among Negroes, one is due to tuberculosis. 908 North Carolinians died from this disease last year. Last year 150,000 cases of tuberculosis were reported in this country. With another 100,000 already reported and an estimate of 250,000 unknown cases, there were approximately half a million people in this country with active tuberculosis. In North Carolina 3,274 cases were reported last year and 3,591 the year before. 6,865 cases of active tuberculosis were reported in our state during the past two years.

I do not wish to confuse you with statistics, but these figures are graphic reminders of the seriousness of the tuberculosis problem in this country today. They are reminders, too, of the

tragic waste of tuberculosis, because it is a preventable disease. We know that tuberculosis can be controlled. We have the weapons at our disposal. It is up to us to use them.

An effective plan of tuberculosis control embraces these principal phases—case-finding and supervision, medical care and isolation, aftercare and rehabilitation. A program which includes these public health measures supported by **research and well-planned health education** in each field of endeavor will be certain to reduce tuberculosis morbidity and mortality. To this end tuberculosis associations are cooperating with official tax-supported agencies. A fundamental objective being, building adequate public support for official tuberculosis control.

The North Carolina Tuberculosis Association is a service agency. Its services are rendered mainly to its 115 affiliated associations and committees and through its medical section, the North Carolina Trudeau Society, to the medical profession in the State. The State Association works through these 115 affiliates to carry the program to the people of the State. This Association will be designed as the NCTA through the remainder of this article. Professionally trained staff members of the NCTA work as field secretaries and assist the affiliates in their programs of health education, fact-finding, case-finding and programs for special groups. The NCTA also provides training for workers for local associations as well as holds institutes for volunteers.

The NCTA maintains as its chief aim the education of the public toward tuberculosis. Continuous and unrelenting education and information, the fundamental parts of the campaign to wipe out tuberculosis, must precede and accompany all tuberculosis projects. All the resources upon which we depend for victory over the disease can neither be made available nor used unless the public understands and supports the plan of campaign. The tuberculosis association has accepted the responsibility of educating adults and boys and girls in school regarding the communicability

of tuberculosis and the responsibility of the individual, the community, the state and the nation for taking the measures to prevent its spread. The State Association recognizes there are two fundamental jobs of health education. One is to inform and obtain action by individual health problems. The other is to inform and secure action by the community on community problems. It realizes that the two jobs overlap and intermingle and that both demand a basic understanding of tuberculosis and the measures for its control. Consequently, a steady series of activities designed to inform all the people in the state on the nature of tuberculosis is attempted at all times.

Case-finding is essential to the control of tuberculosis. People with tuberculosis must be found and treatment provided for them. The State and local tuberculosis associations cooperate very closely with the Division of Tuberculosis Control of the North Carolina State Board of Health. Last year local affiliates of the NCTA provided some \$25,000 to assist this Division in mass X-ray services. Field service was provided by the State Tuberculosis Association to the Division of Tuberculosis Control in these services. Several local tuberculosis associations have purchased mobile X-ray units, while others have purchased X-ray units for their local health departments.

Fact-finding is the first step in planning a program. The Association is constantly engaged in assembling all the facts about the tuberculosis situation in the State. It has to be continuous because facts change from year to year.

The NCTA and its local affiliates continue to cooperate with the state and local tuberculosis sanatoria in plans for rehabilitation programs in their institutions. Two consultants from the Rehabilitation Service of the National Tuberculosis Association were brought to the State last year for conferences with medical directors, rehabilitation workers and others interested in this phase of the program. These conferences resulted in a clearer understanding and a deeper appreciation for this phase of

treatment. It is interesting to note that five county sanatoria and one State have rehabilitation workers on their staffs this year. The three state institutions have money in their budgets for three rehabilitation workers at each institution but as yet the trained personnel is not available.

The NCTA and 47 of its local affiliates made a special contribution of \$2,050 this year to the American Trudeau Society for its continuous research program. Twenty-two grants have already been approved by this Society to aid specific tuberculosis research during this fiscal year. Dr. David T. Smith of the Duke Medical School received one of these grants to continue his studies of chemical agents which appear to inhibit the growth of the tuberculosis germ. The State Association feels that this support of research represents one of the best possible investments made for every community everywhere, since the findings benefit all mankind.

With the exception of treatment, these are the weapons being used by the tuberculosis associations, the weapons for which we are supplying the ammunition when we buy Christmas Seals. Christmas Seal funds are not used for treatment, which is provided in tuberculosis hospitals maintained from tax funds. Not only is this a function of government, but Christmas Seal funds would not begin to cover the cost of treatment.

If all of the money raised from the Christmas Seal Sale last year had been used for treatment, it would have provided for only one week's hospital care for the people in this country with tuberculosis.

The Association, therefore, engages in those activities which it can best perform with the small voluntary contributions from thousands of individuals through the sale of Christmas Seals, its sole support.

The 1948 Christmas Seal Sale in North Carolina was \$375,809.41. Five per cent of this amount or \$18,790 was sent to the National Association. The other 95 per cent or \$357,019.41 was kept for the work in North Carolina. \$62,789.13 was budgeted to the North Carolina Tuberculosis Association for its program and the larger portion or \$294,230.28 will be spent on local program in the counties where the money was raised.

You will find listed below the expenditures of the NCTA for the last fiscal year.

Health Education and	
Information	\$27,934.44
Rehabilitation	2,400.00
Administration	5,923.94
Seal Sale	9,361.35
Field and Organization	12,942.60
Research	2,000.00
<hr/>	
TOTAL	\$60,562.33

THE OUTLOOK IN THE CAMPAIGN AGAINST TUBERCULOSIS

By H. S. WILLIS, M. D.
Superintendent, The North Carolina Sanatoria
McCain, North Carolina

One year ago, the story was told in the pages of this Bulletin of the great shortage of tuberculosis beds in the State, of long waiting lists, of people dying while on those lists, of many never able to gain admission. Today the talk is far different, for the General Assembly of 1949 approached the bud-

get request realistically and appropriated almost all the money that was requested. This fact should enable the public to rejoice for, when the present appropriations are translated into building, equipment and personnel, there need be no waiting list any longer, and the citizen who is unfortunate enough

to develop tuberculosis may be hospitalized on the day of his diagnosis. This represents a great step forward, and it should be brought to completion within the next year and a half. For the present, what can be done for the patient with tuberculosis is inadequate but, come the fruits of the present program, his lot will be far better.

The present situation has come about gradually. The Board of Directors and the Superintendent, Doctor McCain, recognized the magnitude of the program earlier, and obtained appropriations for the creation of the Western Sanatorium at Black Mountain and later of Eastern at Wilson to establish the present system. Utility of these beds has been reflected in the continual decline in the death rate. However, the population is increasing, case-finding efforts are producing larger numbers of tuberculosis cases, and the situation came to the sorry past mentioned above. Recognition of conditions stimulated the Board of Directors of the Sanatoria last year to establish a budget that was calculated to meet the needs of the foreseeable future, to eliminate waiting lists and thus remove from home sources of further spread, and eventually to eradicate the disease from our midst. Such a budget was drawn: such a one was passed by the Legislature.

At the hearing before the Advisory Budget Commission, Chairman Lee Gravely presented a most eloquent and dramatic plea for the budget as requested. He set forth sound reasons for the budget items, and cited cases which illustrated the justice and the urgency of the issue. He had left his sick bed at the Eastern North Carolina Sanatorium a few brief hours before he addressed the group, and he came as a tuberculous patient, pleading the cause of all such patients. Everyone in the room was moved. Again he came before the Joint Appropriations Committee to recommend the approval of the budget as passed by the Advisory Budget Commission, and again he told effectively the story of the need.

The budget provides for increasing beds in the several sanatoria as follows:

Western North Carolina Sanatorium
from 300 to 550

Eastern North Carolina Sanatorium
from 200 to 640

North Carolina Sanatorium from 600
to 700

and it establishes a new sanatorium of 100 beds at Chapel Hill to operate independently but in close cooperation with the new University Medical School. Thus it increases beds operated by the State from approximately 1100 to more than 1950, together with the equipment and personnel required.

The total cost of the program is about seven million dollars (\$7,000,000).

More specifically the expansion provides ractification of the deteriorated structures, cramped quarters, worn out equipment, and inadequate personnel which the depression, war and war scarcities imposed. At McCain, there will be a new quarters for employees, new dietary building, nurses home, utility building including laboratories, occupational therapy building, renovation and enlargement of wings of older buildings, and many basic improvements in services at the power house and in the kitchens. There will be added employee living space at Western, along with interior renovations, and the addition of a wing for 150 Negro patients as well as additions to kitchen, power house and laundry. The services at Eastern will be improved and enlarged by a new nurses home and employees' building, kitchen and service building, renovation of the laboratory and X-ray division, and new units for hospitalizing a much larger number of patients of both races.

An added feature in the program of expansion is the erection of a new Sanatorium at Chapel Hill, which should provide for rotation of the permanent staffs of the other branches through its services in order to combat medical isolation and to give patients better medical care. Furthermore, it may be a recruitment station for young dietitians, nurses, technicians and physicians for all of the Sanatoria in the system. In this way it should raise the level of medical care in all the sanatoria.

And it will benefit the medical school because students will have an opportunity to observe and study tuberculosis as few student bodies in the country can—all of which means better medical service to the people.

This represents the program, and its aim is the control and elimination of tuberculosis from North Carolina. It is a challenge and a responsibility which

the Board of Directors and the personnel in all the units accept with enthusiasm.

In summary, it may be repeated that, when the expansion program is completed, there need be no waiting list, there need be no tuberculous patient remaining at home for weeks or months, infecting his family and losing his best chance of recovery. That day will be a welcomed day to the people of this State.

TUBERCULOSIS AND THE NEGRO

By MRS. VELMA TURNAGE JOYNER

Field Secretary

North Carolina Tuberculosis Association

Raleigh, North Carolina

It is generally agreed that the best available single index as to the status of tuberculosis in a community is the mortality rate from the disease. This rate has long been a basic measuring device. It has been used to determine the need for personnel and other facilities to detect and supervise the case, and it has been used to show what progress has been made and what remains to be done before tuberculosis finally makes its exit. In fact, so much significance has been attached to death rates that it is easy for one to forget that death figures tell but one side of the story.

Those concerned with tuberculosis control are fearful lest the downward trend in death rates should call forth complacency on the part of some and the mistaken impression that fewer facilities are needed now or will be needed in the future to bring this scourge of mankind within control. With reference to this Dr. Herbert R. Edwards, Executive Director, of the New York Tuberculosis and Health Association warns that, "The tuberculosis death rate as a criterion of our needs and progress in the control of the disease is of less significance today than formerly." Similarly, the tuberculosis death rate as a criterion of the prevalence of the dis-

ease among Negroes is misleading. The fact that in 1945 for the first time in history Negro tuberculosis deaths fell below 100 per 100,000; that in the 15-44 age group the Negro tuberculosis mortality rate is about five times that of the white; that among Negroes, too, tuberculosis is in fourth place as a cause of death has given rise to the belief that more tuberculosis exists in the Negro population than in the white. But community wide surveys are revealing this fallacy that death rates indicate. The number of active cases found among Negroes by survey is relatively small compared to the number expiring annually. Dr. Francis J. Weber, Chief Tuberculosis Control Division USPHS said:

"It is true that epidemiology has not as yet resolved the perplexing lack of correlation between tuberculosis morbidity and mortality in the Negro. Community radiographic case-finding surveys reveal that the prevalence of the disease among Negroes is essentially the same as among whites. However, when the infection does take hold it is far more likely to run a rapidly fatal course in the Negro than in the white person."

This disproportionate morbidity and mortality rate has great significance for persons doing health education and specifically tuberculosis education

throughout the State. First of all it is a mistake to assume that because the Negro death rate is high there is a correspondingly high degree of interest. The type of interest that will result in a change of attitudes and favorably influence behavior must be created. That is the task of health education.

All too often individuals in their eagerness to teach the basic facts about tuberculosis are guilty of "cramming health education down the recipient's throat without any attempt made to correlate it with his needs or desires." In such an instance concentration is on what one desires his audience to learn rather than what he wants to learn. This is an attempt to say that the approach to tuberculosis education must be considered. Begin where the interest of the group lies no matter how remote it seems at the present from tuberculosis control. It is also well to keep in mind, however, that the control of tuberculosis cuts across many areas, and that all good general health programs will eventually aid in the eradication of tuberculosis.

This brings us to the point where it seems fitting to suggest that building resistance to tuberculosis should be a definite part of tuberculosis education. This should be discussed from the standpoint of building a good native resistance. It is reasonable to assume that the defense forces of the body have a much better chance of keeping tubercle bacilli from establishing beachheads in the lungs, increasing in numbers there, and causing serious trouble when a person is in good health. The importance of

practicing the rules of healthy living should be stressed. These rules include getting variety into the foods eaten every day so as to supply the body with all the different food elements needed for good health; exercising regularly out of doors; getting enough sleep, rest, and recreation; living and working in well-ventilated rooms; and wearing clothes suitable to weather conditions.

From the days of the ancient Greeks and Romans to the present, diet has been recognized as an important factor in the treatment of tuberculosis and there is persuasive clinical and epidemiological evidence that malnutrition lessens resistance to tuberculosis. Poor nutrition operates especially among Negroes. This may be due in part to poverty and in part to cultural factors influencing the choice of foods. Whatever the cause, it presents a challenge and should not be overlooked in program planning.

The importance of early diagnosis must be stressed over and over. Numerous studies have confirmed that pulmonary tuberculosis is a severe and rapidly fatal disease among Negroes. Discovered early the chances for cure are greater. There is a need for indoctrination in the belief in this health principle.

In summary, a tuberculosis and health education procedure is naturally a slow one. We are battling against complacency, deep rooted customs misconceptions, superstitions and prejudices, and we will succeed in proportion to the amount of participation we can encourage and assure.

DRUGS IN TUBERCULOSIS TREATMENT

By H. CORWIN HINSHAW, M. D.
Immediate Past President of
the American Trudeau Society

Patients and physicians have always longed for a drug capable of eradicating tuberculosis infection, one that would obviate the need for long discouraging months of bed rest, the risk and pain of

surgical operations, and that would shorten the years of uncertainty, with fear of recurrent disease, after apparent arrest of active tuberculosis. Uncritical stories and rumors of new drugs have

repeatedly aroused the hope that this vision might become a reality in the immediate future.

Confused by account of uncertain authenticity which suggest unbelievable properties of new "wonder drugs" and curative procedures, patients are often in a hopeless quandry. They do not have ready access to technical literature, nor could they usually comprehend and apply to their own problems the mass of complicated, and at times conflicting, experimental studies recorded in medical journals.

Some salient facts have emerged from the many studies on drug treatment of tuberculosis which have been agreed upon by numerous competent investigators. It has been demonstrated repeatedly that the bacillus of tuberculosis may be restrained in its growth and multiplication within the human body by means of newer drugs. This restraint is not always complete and frequently it is operable for a limited period of time only.

Drug treatment is best omitted when not truly needed, most physicians now believe. Not only are undesirable effects of treatment avoided, but treatment might be needed more desperately to meet some subsequent crisis and unfortunately such treatment often can be employed but once.

The physician must estimate the patient's powers of resistance against the infection and fortify them by every means known. Rest, balanced nutrition, emotional serenity, and an indomitable will to recover are priceless assets to every patient with tuberculosis.

Surgery or lung collapse combined with newer drug treatments may yield results greatly superior to those of previous years. To choose the best combination of treatments, the physician must estimate which tissues are destroyed and which are only inflamed and capable of healing. This requires skill and experience, since there are nearly as many different problems as there are patients. The growing tendency is to train all weapons upon the enemy microbe

simultaneously when serious progressive disease is present.

New antituberculosis drugs have appeared and others are on the horizon. Genuine advances in the treatment of tuberculosis will be recorded in the months and years ahead, but how is the bewildered patient to distinguish facts from fancies?

The prudent patient will not attempt, as an amateur, to assay rumors or to trace sensational stories, but he will place his trust in a dependable physician of his choice. Few people are so rash as to trust their lives and property to their own legal judgement when difficulties arise with courts of law, but many have lost everything by choosing to ignore sound medical advice.

The nationwide facilities of the National Tuberculosis Association, its state and local affiliates, and its medical section, The American Trudeau Society, have been used repeatedly to distribute reliable information to physicians and to patients about new methods of treating tuberculosis.

Under National Tuberculosis Association sponsorship, committees of scientists and physicians are constantly studying new and unproved treatments, hoping to render judicial opinions for the guidance of physicians in treating the patients for which they are responsible. This committee work is one of the activities supported by the Christmas Seal funds and has been an important integrating influence in a shifting field of turbulent scientific activity.

That older persons now constitute the major focus of tuberculous infection is emphasized by recent autopsy studies which show that a relatively large number of persons supposedly succumbing to diseases other than tuberculosis were found to have this disease in active form. It is recognized that the disease in older persons is frequently mild and that the symptoms may be overlooked.—Statistical Bull., Metropolitan Insurance Co., No., 1948.

Deaths from Tuberculosis by County and Race: 1948

COUNTY	PLACE OF DEATH						PLACE OF RESIDENCE					
	RESPIRATORY		OTHER		TOTAL		RESPIRATORY		OTHER		TOTAL	
	White	Other	White	Other	White	Other	White	Other	White	Other	White	Other
Entire State	386	536	20	52	406	588	335	503	19	51	354	554
Alamance	4	2	---	---	4	2	8	3	---	---	8	3
Alexander	---	---	---	---	---	---	1	---	---	---	1	---
Alleghany	---	---	---	---	---	---	---	---	---	---	---	---
Anson	---	3	---	---	---	3	1	5	---	---	1	5
Ashe	1	---	---	---	1	---	3	---	---	---	3	---
Avery	4	---	---	---	---	---	4	---	---	---	4	---
Beaufort	4	4	---	2	4	6	5	9	---	1	5	10
Bertie	---	9	---	2	---	11	2	15	---	2	2	17
Bladen	2	1	---	---	2	1	2	2	---	1	2	3
Brunswick	1	1	---	---	1	1	1	1	---	---	1	1
Buncombe	123	73	1	4	124	77	21	15	---	1	21	16
Burke	10	---	---	---	10	---	5	---	---	1	5	1
Cabarrus	4	---	---	---	4	---	7	9	---	---	7	9
Caldwell	---	---	1	---	1	---	3	---	1	---	4	---
Camden	---	1	---	---	---	1	---	1	---	---	---	1
Carteret	---	---	---	---	---	---	3	1	---	---	3	1
Caswell	---	1	---	---	---	1	2	1	---	---	2	1
Catawba	1	---	---	---	1	---	1	2	1	---	2	2
Chatham	---	1	---	---	---	1	---	3	---	---	---	3
Cherokee	2	---	---	---	2	---	4	1	---	---	4	1
Chowan	1	2	---	---	1	2	1	3	---	---	1	3
Clay	---	---	---	---	---	---	1	---	---	---	1	---
Cleveland	1	1	---	1	1	2	4	2	---	1	4	3
Columbus	1	1	1	---	2	1	6	2	1	---	7	2
Craven	1	2	---	2	1	4	2	7	---	4	2	11
Cumberland	2	10	1	4	3	14	3	12	1	2	4	14
Currituck	---	1	---	---	---	1	---	2	---	---	---	2
Dare	---	---	---	---	---	---	---	---	---	---	---	---
Davidson	5	---	---	1	5	1	4	2	1	1	5	3
Davie	---	---	---	---	---	---	---	---	---	---	---	---
Duplin	2	1	---	---	2	1	3	5	---	---	3	5
Durham	9	17	1	1	10	18	5	26	---	1	5	27
Edgecombe	5	10	---	1	5	11	6	13	---	1	6	14
Forsyth	11	31	5	8	16	39	13	40	1	8	14	48
Franklin	---	---	---	---	---	---	1	4	1	1	1	5
Gaston	5	---	---	---	5	---	7	---	1	1	7	1
Gates	---	2	---	---	---	2	1	3	---	---	1	3
Graham	---	---	---	---	---	---	---	---	---	---	---	---
Granville	---	1	---	---	---	---	1	6	---	1	1	7
Greene	---	3	---	---	---	3	---	4	---	---	---	4
Guilford	12	20	---	2	12	22	14	20	1	1	15	21
Halifax	4	10	1	1	5	11	5	12	1	3	6	15
Harnett	4	2	---	---	4	2	4	4	---	---	4	4
Haywood	---	---	---	---	---	---	---	1	---	---	---	1
Henderson	4	---	---	---	4	---	7	---	1	---	8	---
Hertford	3	2	---	1	3	3	3	4	---	2	3	6
Hoke	17	81	2	5	19	86	3	5	1	---	4	5
Hyde	---	1	---	---	---	1	---	1	---	---	---	1
Iredell	1	5	---	1	1	6	1	6	---	1	1	7
Jackson	---	---	---	---	---	---	---	1	---	---	---	1
Johnston	7	2	---	---	7	2	8	4	1	1	9	5
Jones	---	1	---	---	---	1	---	1	1	---	1	1
Lee	---	---	1	---	1	---	---	2	---	---	---	2
Lenoir	4	4	---	---	4	4	3	10	---	---	3	10

Deaths from Tuberculosis by County and Race: 1948

COUNTY	PLACE OF DEATH						PLACE OF RESIDENCE					
	RESPIRATORY		OTHER		TOTAL		RESPIRATORY		OTHER		TOTAL	
	White	Other	White	Other	White	Other	White	Other	White	Other	White	Other
Lincoln			1		1		2		1		3	
McDowell	1				1		1				1	
Macon	1				1		3	1			3	1
Madison	3				3		3				3	
Martin	1	7		1	1	8	2	10		2	2	12
Mecklenburg	10	17		1	10	18	13	16		1	13	17
Mitchell	3				3		3				3	
Montgomery	1	1			1	1	1	1			1	1
Moore	2	3			2	3	4	8			4	8
Nash	3	17	1	1	4	18	6	17		1	6	18
New Hanover	5	3			5	3	8	12			8	12
Northampton		8				8		12				12
Onslow	1	1			1	1	3	1			3	1
Orange								2				2
Pamlico	1	1		1	1	2	1	7		1	1	8
Pasquotank	1	1			1	1	2	3			2	3
Pender	1	1			1	1	3	3			3	3
Perquimans	1				1		1	2			1	2
Person	1	2			1	2	3	2			3	2
Pitt	4	8			4	8	8	22		1	8	23
Polk	2				2		4				4	
Randolph	2	1		2	2	3	3	3		2	3	5
Richmond		2				2		2				2
Robeson	4	3		2	4	5	7	7		2	7	9
Rockingham	3	7	2		5	7	6	14	2		8	14
Rowan	4	1			4	1	6	4			6	4
Rutherford	3				3		5	1			5	1
Sampson	1	4			1	4	2	5			2	5
Scotland	1	1	1		2	1	3	4	1		4	4
Stanly	2	1			2	1	3	1			3	1
Stokes	1				1		1	1			1	1
Surry	8				8		9		1		10	
Swain		2				2	1	2			1	2
Transylvania												
Tyrrell								2				2
Union		1		1		2		3		1		4
Vance	2	1			2	1	4	5			4	5
Wake	31	12		1	31	13	12	16		1	12	17
Warren	1	3			1	3	2	8		1	2	9
Washington								1				1
Watauga	1				1		2				2	
Wayne	4	79		2	4	81	5	10		1	5	11
Wilkes	2		1		3		4	1	1		5	1
Wilson	15	42		4	15	46	6	24		2	6	26
Yadkin	2				2		2		1		3	
Yancey	2				2		2				2	

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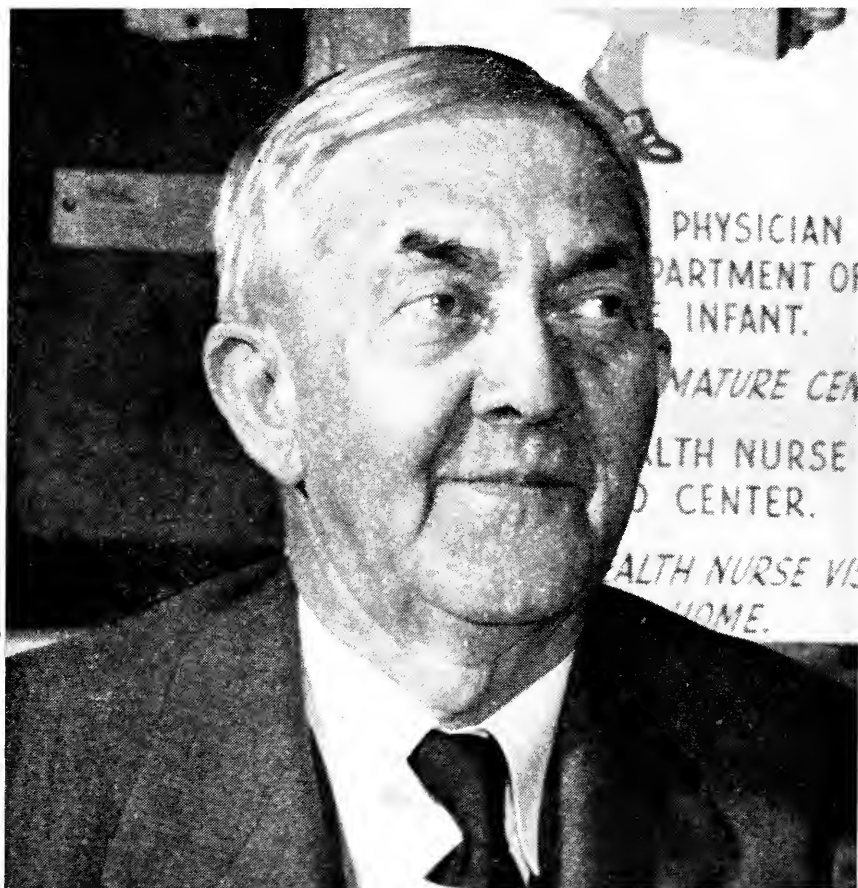
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Prenatal Care.
 Prenatal Letters (series of nine monthly letters).
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 Infant Care.
 The Prevention of Infantile Diarrhea.
 Breast Feeding.
 Table of Heights and Weights.

Baby's Daily Schedule.
 First Four Months.
 Five and Six Months.
 Seven and Eight Months.
 Nine Months to One Year.
 One to Two Years.
 Two to Six Years.
 Instructions for North Carolina Midwives.

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SOME PUBLIC HEALTH SERVICES TO THE PEOPLE

By WILLIAM H. RICHARDSON

North Carolina State Board of Health
Raleigh, N. C.

The State Board of Health and county boards throughout North Carolina receive frequent inquiries from those who wish to know more about the services available to them through these agencies. For example, this question has been asked: "Just what is Public Health doing for the Negro population of the State?" The answer to this sample question is that Public Health is performing the same services for the Negro population of the State as it is performing for the white population. Public Health observes no color line in the official administration of its work; neither does it consider a man's religion or his economic status. It is true, however, that Public Health does more for those who are unable to pay for certain services. It also affords "Mass protection" against preventable ills. On this point, there is the fullest cooperation between organized medicine and public health, for it must always be borne in mind that public health is a child of organized medicine.

Public Health in North Carolina came into being as a *full-time* department of government as a result of an Act of the General Assembly of 1909, which provided for a full-time State Health Officer. Actually, the State Board of

Health was created in 1877. The first pamphlet to be issued by this newly-created Board, which, at first, consisted of the entire State Medical Society, was "Timely Aid for the Drowned and Suffocated," and the annual appropriation was the magnificent sum of \$100. We shall not undertake to give a chronological account of the development of Public Health in North Carolina. This would involve too many details.

For many years after its creation, the State Board of Health performed useful services with the material in hand. However, most of the Board's work consisted of holding consultations and issuing pamphlets. In passing, it is interesting to note that Public Health records of the State show that, as early as 1890, North Carolina was visited by a severe epidemic of influenza. It was then called "grip" or "La Grippe." The epidemic first appeared in Russia in November, 1889. By mid-December of that year, 200,000 cases were reported in New York alone. The epidemic struck North Carolina during January, 1890, and in two weeks time was reported to be raging in 68 counties. Back in those days, we had no adequate system of reporting either the prevalence of certain diseases or the number of deaths result-

ing therefrom. One of the most useful services Public Health is rendering today is the adequate reporting of all births and deaths, and the number of cases of 35 communicable diseases and cancer.

At the turn of the century, Public Health in North Carolina began to look up, but even then the means in hand were meager. It was not until 1907 that the annual appropriation of \$2,000, which began around 1885, was increased to \$4,000. Following the provision for a full-time State Health Officer, in 1909, the appropriation was increased to \$10,500, and it has since then enlarged from time to time until this last Legislature increased it to nearly \$2,000,000 a year, thereby more than doubling any previous appropriations for Public Health work. This was done through close co-operation of our Public Health officials in seeking the increase with the active approval of Governor Scott.

The year 1905 was a milestone in the Public Health history of North Carolina, for it was during that year that the General Assembly voted to establish the State Laboratory of Hygiene, which now not only has come to be one of the finest institutions of its kind in the United States, but saves the people of North Carolina an estimated several million dollars a year in services rendered. Before the Laboratory was established, for example, if a person were bitten by a dog known to be rabid, the nearest place he could receive treatment was Richmond. The establishment of a Laboratory of our own made these treatments possible right here in North Carolina. That was just the beginning. The Laboratory today prepares and distributes the agents for immunizing the population against practically every preventable disease. While time will not permit an enumeration of these diseases, with a discussion of each, it is of importance to note that, coincidental with the availability of immunizing agents, death rates from preventable diseases have all shown remarkable decreases.

One of the most important victories ever achieved by Public Health was that

which was "chalked up" during the last session of the Legislature, to which previous reference has been made. After much discussion, the appropriating body of the State provided approximately \$800,000 in new money for each year of this biennium. This money recently was allocated to the counties for improving local Public Health work. This means many increased services for the people in the "grass roots." There are so many services which Public Health performs in this modern, complex age that it would be almost discriminatory to single either one or a group of these services for particular discussion.

The past dozen or so years have witnessed an intensive and successful campaign for the control and cure of venereal diseases. Millions of dollars have been spent in North Carolina on this project alone, but the work of attacking syphilis and gonorrhea is no longer spectacular and is carried on as a routine part of Public Health in North Carolina. We have also instituted programs for the early detection and treatment of tuberculosis and cancer. Our Public Health officials now are looking with longing eyes in the direction of that day when they will be able to participate successfully in movements to conquer what we know as those degenerative diseases which are responsible for more than half of the deaths occurring from all causes. Our Number One killer today is heart disease, which has all but backed the former champion, tuberculosis, off the boards. Attention also is being given to a more intensive study of diabetes, nephritis, and other diseases that take a tremendous toll of life each year.

It was not until 1911 that provision was made for county boards of health to take the place of county sanitary committees, which operated prior to that time and performed what few local health services were available. On June 1 of that year, Guilford County inaugurated full time county health work. The task of convincing the counties of the advantages of full time local health boards has not been easy at all

times, but the momentum gained was steady, even if slow at times. All of North Carolina's 100 counties have now been organized, either as a local health unit, or as a part of a public health department. This means that every man, woman and child within the borders of our State has all of the advantages of Public Health close at hand. It might be pointed out that the benefits of Public Health actually are administered in the counties. While it is necessary for an organization to be maintained at Raleigh, Public Health is made available to the public within their own neighborhoods, and no attempt is made by the Central Administration to dictate to any local health unit. Our people are as capable of self-government in the matter of health as they are in the matter of adopting local policies along any other line.

One of the encouraging signs of the times in Public Health is the improvement of local facilities, including the housing of local health boards. These units are gradually emerging from basements, coming down from attics, and moving from back rooms to front rooms. Many of our county health departments now occupy buildings dedicated solely to their needs. In this connection, it is well to point out that the last Legislature, in the spirit of generosity which it manifested toward Public Health, appropriated \$600,000 for a new State Board of Health building in Raleigh, in addition to the liberal increase it gave for county health work. In an address at Greensboro on the night of September 16, 1949, Dr. Leonard A. Scheele, Surgeon General, U. S. Public Health Service, declared that when the 1949 Legislature practically doubled the State appropriation for Public Health, it put North Carolina way out in front in its relation to the entire sisterhood of states. He praised the support that Governor Scott gave the movement to secure these additional funds.

In addition to the State appropriations that are made for Public Health, the Federal government spends much money in North Carolina every year, helping to make available certain serv-

ices which, otherwise, could not be enjoyed by those needing them. Such funds came into being and were made available with the creation of the Social Security Board in Washington. Such funds have been allocated to North Carolina, as to other states, purely on a pro rata basis. The influx of Federal funds into North Carolina was given impetus with the Reynolds Foundation grant for an intensive campaign against venereal diseases. In fact, North Carolina's pioneer work in this field stimulated Federal action all along the anti-V. D. front. As a break-down of available funds will show, North Carolina now is receiving grants from the Federal government for many phases of its Public Health activities. But the most encouraging sign of the time is that the State itself appears to be waking up to its own responsibility for the health of the people. It is well that this is so, because we have no assurance that Federal spending in the states will continue on its present scale indefinitely. We should, therefore, be prepared to carry forward any essential service in the event of a withdrawal of Federal funds.



William Curtis Barbour when one year old, son of Mr. & Mrs. William Albert Barbour, Four Oaks, North Carolina.

No matter in which county of North Carolina you live, the time has come when you are the beneficiary of Public Health, and if there are other things you would like to know about this important subject, consult your local health officer. He will be glad to help you in any way he can.

APPROACHES TO URBAN SANITATION EDUCATION*

WILLIAM C. GIBSON, Educational Director

Sanitation Field Training

School of Public Health

University of North Carolina, Chapel Hill, N. C.

Problem Solving Approach.

Sanitation divisions of public health departments are overloaded with work. This is the common complaint of the smallest and largest units. An increasing volume of service requests and nuisance complaints pour in every day. In an effort to keep current with this demand the planned programs tend to be pushed aside. We find ourselves joining in the demand for additional personnel in order to do an effective job of urban and rural sanitation in our communities.

Although statistical averages may lead to erroneous deductions it is worth noting that the average population ratio per sanitarian in a group of nine states of the southeastern region is approximately 24,000 to 1. In areas familiar to the writer where the ratio is as low as 7,500 to 1, the need for additional personnel is also acute because of the demands of broadened programs sponsored by these departments in an effort to keep pace with new and increasing environmental problems and health hazards accompanying our complex modern civilization.

We must have additional well-trained personnel! However, this is only a part of the answer to the increasing work loads facing sanitation divisions. We must pause and take stock of our community sanitation problems and ask ourselves why we are not making progress faster in solving them. We must analyze critically the distribution of our time and ask ourselves if our efforts are being directed to the solution of the major environmental problems of our areas. We must examine our approach to the solution of our sanitation problems to determine if we are making ef-

fective use of all of our community resources for the solution of these problems.

To assist in this basic analysis, increasing numbers of health departments and communities are making use of the APHA Sanitation Evaluation Schedule in an effort to measure the level of community sanitation; to appraise the effectiveness of existing programs; to point out weaknesses; and to provide a planning aid for the intelligent use of local facilities to meet sanitation problems in the order of their relative importance. This tool provides us with a method to make an objective systematic study of the sanitation status of our community—both urban and rural. This tool enables us to put aside the empirical approach by giving us an understanding of the environmental sanitation problems of our own areas.

All good sanitation divisions make repeated inspections of a variety of establishments; they collect and analyze huge numbers of water, food, milk and sewage samples; they investigate staggering numbers of nuisance complaints; and so on. Why? Because it is customary. It is the accepted practice. Schools of Public Health teach it. Yes, Evaluation Schedules demand it. We try to carry on all these activities with equal emphasis and we add others to burden our load. This is the empirical practice of sanitation control and it is a vicious cycle that grows bigger and bigger as the years pass.

If we use the Evaluation Schedule

*Presented at Interstate Sanitation Seminar, Blue Ridge, N. C. August 24, 1949.

merely to measure our work against a national standard, that often does not apply, we gain only the satisfaction of knowing how our program rate in comparison with others. If, however, we think of the Evaluation Schedule as a tool to help us analyze the sanitation problems of our areas we have an effective aid for the development of programs aimed at our own needs. This is the opposite of the empirical practice of sanitation!

If 10% of your community uses raw milk, that is a sanitation problem of your community. If 25% of the homes in my community do not have municipal water and sewage connections, that is my community problem which requires definite action. If 50% of our food establishments are Grade C—if malaria, typhus, undulant fever, and hookworm cases are reported in our communities, they define our problems—and we have the basis for a planned sanitation program directed to these specific problems. This is the problem solving approach—the opposite of the empirical approach—and my understanding of the fundamental approach to urban and rural sanitation education. Through this approach we learn the particular sanitation problems of our own communities so that we may attack them in the order of their relative importance. This is the education of ourselves and our staff colleagues that must come first before we can develop a sound program. Through this approach we will arrive at the desirable quota of sanitation personnel for our communities—and not alone by arbitrary standards regardless of how liberal.

Individual Approach.

Sanitation personnel make countless thousands of individual establishment inspections yearly. Much improvement is accomplished by this routine. No doubt this inspectional technique will be continued as a principle activity of sanitation divisions. Our sanitary codes and regulations demand that this service can be rendered. Once we have defined our principle community sanitation defects by the problem solving

approach, we will make repeated individual visits to those types of establishments which have been found to be amongst our major problems.

Our personnel time for making establishment inspections will be budgeted according to the relative importance of the problem. The emphasis will vary from community to community based on the studies made of our own community problems.

It is essential that we examine our inspectional techniques to make each contact of maximum educational value to the operators and employees of establishments inspected. Mr. Operator is justified in wanting to know why he should make requested improvements. The fact that the law or regulation says so does not satisfy him in these demands upon his pocketbook. He expects to learn from the Sanitarian the public health reasons for the requested improvements and the interpretation of reasonable compliance. In his desire for this information exists the opportunity for education of the operator and his employees through discussion, demonstration, expert guidance and advice on handling methods, equipment purchases, layout diagrams, and so on.

Almost any person can be taught to fill out inspection forms. A measure of a good sanitation worker rests in his ability to use the results of the inspection to obtain improvements through the development of an understanding and desire by the establishment proprietor to carry on good sanitation practices. This approach establishes the sanitation worker as a teacher and a consultant. This is a high trust which carries a heavy responsibility to equip ourselves properly to give sound guidance on the "when", "why", "where", "how", and "how much" angles of good sanitation practice.

Even this is not enough! The alert sanitation worker must use the inspection opportunity to analyze the deficiencies of the establishment in order to assist the operator in the preparation of a time-improvement schedule. This technique places most important items first and gives the operator a logical

time table to guide him in his improvement program. The operators signature on this schedule is his pledge of good faith that he will correct each deficiency within the agreed time period. Later inspections are pointed to assisting the operator in carrying out his obligations accepted and defined in the improvement schedule. This is the individual approach—the problem solving approach applied to the individual establishment. When each establishment operator is working on his own improvement schedule we have broad progress developing according to a plan placing most important items first. In due time we can shift our major emphasis to the next in the list of our key problems. Certainly this is not the empirical approach. This, I believe, is another fundamental approach to sanitation education—the education of the individual establishment operator.

Group Approach.

Many of the individuals we deal with in sanitation programs fall naturally into certain occupational groups. Because of this common interest we have available to us another important approach to the solution of our major sanitation problems—the group approach. This is the opportunity for the education of special groups allied to public health—food handlers, milk handlers, water and sewage plant operators, well drillers and plumbers, resort operators, school administrators, teachers, and janitors, septic tank builders, pest control operators, city councils, and so on.

Many of these groups are already organized at the national, state, and local levels. Several have already adopted excellent standards of practice related to sanitation. A number of the groups conduct annual instructional courses in cooperation with state academic institutions and public health agencies.

Regardless of their individual organizational status, these groups are responsible in a large measure for the level of sanitation in our communities. We must help to make them more fully aware of their responsibilities. We must

assist them in gaining the “know-how” to discharge their sanitation responsibilities in an acceptable fashion.

Let me cite a few specific examples of what I have in mind:

If in the basic studies of the status of our community sanitation we find that one of our major problems is the improper location and construction of private wells and/or septic tanks we can do much to prevent a future repetition of these defects by the education of our well drillers, plumbers, and septic tank builders. It is far more productive to devote our efforts to the prevention of these problems rather than to the correction of defects after health hazards are created and nuisance complaints develop. Similar reasoning can be followed pertaining to the problems of cross-connections and interconnections in the plumbing systems of our communities. Our efforts are productively devoted to the elimination of these hazards in future installations by working with our plumbers, contractors, waterworks officials, and city councils towards an understanding of the hazards involved and their prevention—and ultimately towards the adoption of a regulatory code when all parties concerned have been properly educated to this end.

We are all aware of the proven values obtained through well planned and conducted classes for food and milk handlers. These classes have been most productive in those areas where they have been conducted at the request of the local organizations of food handlers and milk handlers rather than at the sole insistence of the health department. We must extend these opportunities to the other groups allied to the sanitation program. I am of the opinion that we should take still another step concerning such classes when we have the full cooperation and understanding of the food and milk plant operators through their respective local organizations. We should devote our principle efforts to the education of the owners, operators, managers, and other key personnel of these establishments. They, in turn, must accept the primary re-

sponsibility for the instruction of their subordinate personnel. They are in day to day contact with their employees and are thus in a much more effective position to correct faulty work habits and handling methods than the sanitation worker who can make only relatively few contacts. They, too, are psychologically in the proper position to insist on safe and sanitary practices. By so doing we have placed the responsibility for good sanitation practice squarely on the shoulders of the managerial group. We can then look to them for satisfactory compliance.

The routine inspection of dairy farms and the collection and analysis of farm and plant milk samples is an undertaking of major size for every good sanitation division. It is high time that we look to the milk plants themselves for the major portion of these compliance and quality checks. These services should be performed by field inspectors and laboratory personnel hired by the plants. The activities of sanitation divisions of health departments can be more productively utilized in the education of these plant employees, in assisting them with difficult problems, and in making regular checks to assure high quality performance. Again, we look to plant management for compliance with good sanitation practice in all milk handling operations on the farms and in the plant. This, again, is placing the responsibility where it belongs—on the shoulders of plant managers.

This, I believe is the goal to be reached in our work with special groups allied to the sanitation program. Firstly, the education of these groups in cooperation with their local organizations to good sanitation practice, and secondly, the placement of responsibility with them for the conduct of such practice in all of their operations and by all of their employees. Without the preparatory education for these groups, the acceptance of responsibility is difficult to achieve. The avenues of cooperation with academic institutions and state and local agencies for the development of this type of continuing adult educa-

tion are wide open to sanitation workers who see the latent potentialities of this approach to work with groups. Certainly, this is not empirical practice of sanitation. It is another fundamental approach to sanitation education—the education of special groups allied to the sanitation of our communities.

Community Approach.

In the promotion of our sanitation programs we must keep uppermost in mind the importance of an informed community. We can expect to make real progress in the solution of important community sanitation problems when the entire community is aware of the problems. They will demand, through their community leaders, a satisfactory solution. This is the American democratic pattern for progress.

Public health is vitally important to our communities. We must do our community education in a manner that reflects the importance of public health. We cannot expect to receive appropriations for a big job unless we convince our communities and our legislative and appropriating bodies that attaining good public health is a big job.

In the problem solving approach to our community health hazards we will employ every technique demonstrated to be successful in formulating public opinion. We will adopt many of the ethical educational procedures of progressive sales organizations.

In the education of our communities to their important sanitation problems we must adopt techniques to reach all levels of our public. We must use all available publicity avenues—the newspapers, radio, our highway billboards signs, the neighborhood theatres, the popular magazines, display signs in public busses, and so on. I was impressed recently with match folders that I picked up in Ohio which advertised services available from local health agencies in Ohio for the control of venereal disease. Why not? If it is a big problem, let's attack it in a big way. I'm sure that we could use comic books and comic strips to sell good sanitation in an effective manner. It's worth a try. They reach our public. With good plan-

ning we can extend the written and spoken words about public health and our community sanitation problems into homes, factories, schools, movies, bars, restaurants, highways, and so on. By these efforts we will obtain an informed community—a community which will demand Grade A signs in food establishments; pasteurized milk; municipal water and sewage connections; neighborhoods free from rats, flies, and mosquitoes; schools and factories free from health hazards; and so on. I don't believe there is any short cut to this end if we want an educated community with us.

To be most effective this community approach must be well planned, focused on a key community sanitation problem and promoted by community leaders in addition to staff members of the health agency. The community health council or some such advisory body, made up of representatives of the key groups and interests of the community, is a means for obtaining organized community effort. The concentrated impact of community service clubs, the chamber of commerce, the labor unions, the parent-teachers organizations, the youth groups, the newspaper editors, the city councilmen, the medical society, the church groups, and so on, can be directed to the solution of the selected problem in accordance with the

broad plan adopted by the community health council.

This is the community approach to sanitation problems. Certainly this is not empirical sanitation practice. This is another fundamental approach to sanitation education—the education of the community.

Conclusion.

Yes, we need large numbers of additional well-trained sanitation workers to do an effective job of community hygiene. These will come in increasing numbers as we put aside the empirical approach to sanitation control and adopt the problem solving approach. By so doing we will bring to the foreground our key community sanitation problems. We will attack these problems one by one, in the order of their importance. Through the individual approach and the group approach we will push our efforts to the education of these directly concerned to understand the problem and to accept their responsibilities. And meanwhile, by the community approach, we will strive for an educated public that will meet and solve its health problems through its own organized leadership. These are the fundamental approaches to sanitation education. These, I believe, are the real challenges that face each of us engaged in sanitation work.

PREVENTIVE MEDICINE AND MENTAL HEALTH

North Carolina State Board of Health

By WILLIAM H. RICHARDSON

Raleigh, N. C.

The public's attitude toward the mentally ill has been greatly modified since the word "insanity" has been thrown into discard and a more charitable and understanding attitude assumed toward the inmates of our institution for the mentally sick. Progressive thinkers in the field of medicine, psychiatry and Public Health no longer view mental

disorders in the same light as the public viewed smallpox before Jenner gave the world a vaccination against that disease. Prior to his discovery, inoculation was practiced, in order to have the disease "over with" at some opportune time. While there is but one approach to the prevention of smallpox, and that by means of a definite immunizing

agent, the approach of the prevention of mental illness is a more complicated matter, involving theories and conjectures, many of which have not been fully explored. However, it is encouraging to note that mental illness now has become the object of attack through preventive means. As long as we depended upon emptying our mental institutions from the top, we made no progress whatever with the real problem. Continued dependence upon custodial care means continued financial appropriations for such care and continued waiting lists.

The morning light of hope and reason seems to be breaking at last, now that mental illness definitely has become an object of attack through preventive medicine and a recognized Public Health problem. Within the past few months, Governor Scott has designated the State Board of Health as the State agency in North Carolina which will administer Federal funds made available in carrying on our mental health program, together with available State funds for that purpose. While the organization of a Mental Hygiene program has not been perfected, yet the ground work is being laid for an attack to be waged against mental illness as one of the present and future Public Health problems.

Let us for a moment review the present mental health picture in North Carolina, as it is reflected in our institutions for the mentally ill. According to a recent fact sheet, there are now 9,550 persons hospitalized in this State for mental defects, or illness. This, according to the latest compilation, is just 125 short of the entire available bed capacity of all general hospitals in North Carolina in May, 1948. Among those in our State institutions are 1,285 feeble minded and 671 epileptics. There were 180 patients who received the first admissions to State hospitals for the mentally sick in February, 1949, alone.

North Carolina is now providing more hospital care for its mentally ill than in the past. Its average patient population in 1946 was 7,568 as compared with 8,552 in 1947-48. Furthermore, better

care is being given the States mentally ill. This is shown by the fact that there were 6.9 per employee in 1946 and only 5.4 patients per employee in 1947-48. The cost of care, largely reflecting the higher cost of living, increased from \$393 per patient in 1946 to \$584 per patient in 1947-48. Physical improvement of State hospital buildings also is being accomplished. Approximately \$14,000,000, including Federal funds, was made available by the 1947 General Assembly. Purchase of the Camp Butner site and buildings under construction already account for \$4,000,000 of this.

The above reflects investments for care and treatment and not prevention, but it is encouraging to note that more money is being put into this humanitarian service, which naturally means better care of the mentally sick and happier surroundings for them. Hospital care, however, is nothing new. That has been going on in humane states and countries for many decades. North Carolina has not always kept pace with progress in this respect. Hospital care is not enough for the mentally ill, any more than it would constitute a panacea for any other preventable sickness. As was stated in the beginning of this discussion, Governor Scott has designated the State Board of Health as the agency to be responsible in North Carolina for the execution of this State's part in the nationwide Mental Health Program now in progress and for which North Carolina is receiving its proportionate share of Federal funds, made available for the purpose. While the Board of Health's Mental Hygiene program has not been fully formulated, a long range plan is being formulated, looking toward attacking mental sickness from a preventive standpoint.

It is heartening to note that preventive work now is being done through one school social worker and eight mental health clinics partially supported by State and Federal funds. These are located in two medical schools—two at Duke and one at Bowman Gray—and in Asheville, Charlotte, Durham, Wilmington, and Raleigh. Assistance in financing mental health programs has been

given by the National Mental Health Act. On a matching basis, North Carolina receives \$100,000 of Federal funds for training professional workers, and for educational and clinical work.

A partial progress report happily can be made at this time. During the past six months, 1,171 patients have received help through the clinics above referred to. In many instances each patient represents two, three, or four others, who, as parents, teachers and employers, gained a better understanding of themselves and of other children and adults, as the clinic helped them deal with the problems and needs of this one patient. An additional 511 patients are under treatment at this time.

Prevention is said to be comparatively not expensive. If two-thirds of those admitted to State hospitals in February, alone, remain in hospital care one year—as a conservative estimate of time—it will cost North Carolina \$70,080. This sum would meet the cost of two almost ideal, full-time mental health clinics.

Up until recently, mental illness had not received the attention it should have received. There was about it a feeling of futility. But, with the advancement of sociological and other studies affecting human behavior, the conviction that mental illness, at least, could be placed in the category of preventable diseases has grown. In other words, we now are, at least, beginning to make a try at it.

As far back as 1942, there was held in Asheville what was known as the National Corrections Congress, which had to do largely with an exchange of ideas by nationally prominent persons on how to deal with people in correctional institutions, including those for the mentally ill. The writer of this article spent a week in attendance upon the sessions of this national gathering, at the request of the Governor, and in association with the State Health Officer. It was his duty to attend meetings of the mental health section each afternoon and report the proceedings to the press, as the Governor desired that all possible publicity should be given to this distinguished meeting of those exercis-

ing custodial care over the institutionalized segment of our population. Most of the psychiatrists at the Asheville meeting were in uniform, as were almost all other physically and mentally fit persons within the military age group, at that time. However, their studies were based partly upon their experiences in civil life, as our participation in the Second World War, at that time, had not advanced to the point where we could make any substantial, or permanent, findings concerning the mental health of those in our armed services. What we are trying to say, however, is that, for some time now, mental illness has been under consideration as an object of attack on the part of preventive medicine. We shall not undertake to go into any of the causes of mental defectiveness. Broadly speaking, early training and environment, heredity and various other factors, have long been considered as probable causes. But we shall neither dwell upon these nor enumerate any others which might suggest themselves, as this discussion is given by a laymen who refers to medical or psychiatric terms merely to remain factual. It is hoped that at some future time we may be able to give you a report on North Carolina's Mental Health Program that will reflect not only progress, but indicate that we have blazed new trails in this important field of human endeavor.

Here are some facts to think about. Mental illness is no stigma, neither is it a disgrace. The hush-hush period of talking in whispers belongs to the past, as it does in connection with such things as venereal diseases, which were never successfully attacked until they were brought out into the open. The time has come when mental illness should be everybody's business because it affects the entire community in one way or another, just like any other illness. In fact, it is more far reaching than any of the *simple* diseases can ever be.

If any of you who read this article has any problem concerning mental illness, you are invited to write a card or letter addressed to Mental Health, Care State Board of Health.

RESEARCH PROGRAM OF THE NATIONAL TUBERCULOSIS ASSOCIATION

By ESMOND R. LONG, M. D.

Director, Medical Research and Therapy
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of the National Tuberculosis Association

In the fall of 1920 a small committee was appointed by the President of the National Tuberculosis Association, to develop a research program under the Association's sponsorship. In his presidential address at the following annual meeting Dr. Gerald B. Webb said, "We must frankly state our knowledge of the disease, and also the extent of our ignorance regarding tuberculosis, so that we can more wisely guide the efforts made in prevention and cure, and direct research to bring further enlightenment."

In the succeeding 29 years the program initiated in 1920 has expanded greatly, but the objectives have remained the same. Emphasis has been laid from the outset on fundamental research that could be widely applied later in practical investigations in the general campaign for improved treatment and control of tuberculosis.

Fields of Investigation

Among the earliest studies sponsored by the Committee on Medical Research of the National Tuberculosis Association were several on the chemistry and growth of the tubercle bacillus. It was felt that they were fundamental for an understanding of the manner in which the tubercle bacillus multiplies and exerts its effects in the human body. These studies, still being continued, have been highly productive in determining the manner in which the bacillus derives its nourishment from the substances on which it feeds, and the way in which it builds these materials into its own body constituents and specific products, like tuberculin, which have a pronounced physiological effect upon the human host.

In addition to studies of the chemistry and growth of the tubercle bacillus

promising investigations are underway on the genetics of the germ, hereditary variations in the resistance of animals to tuberculosis, factors concerned in native and acquired resistance to the disease, and factors responsible for the death and liquefaction of tissues in progressive tuberculosis. These studies are of basic importance in understanding the development and course of tuberculosis in the human body. Besides these investigations are a series of studies of immediate clinical interest, including researches on nutrition in tuberculosis, the value of certain drugs in experimental treatment of the disease, the differential diagnosis of tuberculosis from somewhat similar chronic diseases of the lungs, the treatment of tuberculosis in children, tuberculosis in nurses, the value of bedrest as compared with other forms of treatment, and physiological study of the effect of tuberculosis upon lung function. The National Association also supports a bacteriological culture depot from which other investigators can secure standard strains of tubercle bacilli of known ancestry for their own studies. This depot has been widely used in the interest of uniformity of basic material by investigators throughout the world.

Relation of NTA to General Medical Research Program

The medical research program of the National Tuberculosis Association is only a part of a much larger general program of tuberculosis research throughout the nation. A recent study by Miss Virginia Cameron, Medical Research Secretary of the National Tuberculosis Association, has shown that the financial assistance to research given by the National Association and its affiliates

amounts to only three per cent of the total funds expended by the nation in the investigation of this disease. The great majority of the total sum spent for research on tuberculosis is devoted to studies of the effect of certain drugs, particularly streptomycin. However, it has been pointed out repeatedly that while quantitatively, from the financial standpoint, the contribution of the Association and its affiliates is relatively small, qualitatively the research program of the Association is of the utmost importance, because many of the basic facts used in applied research on the therapy of tuberculosis were learned in fundamental investigations made possible through grants from the National Tuberculosis Association.

This perhaps answers the question frequently raised: Why does the National Tuberculosis Association not devote a larger percentage of its resources to direct studies on the cure of tuberculosis? The reply, as indicated above, is that the sums required for large-scale studies with costly drugs are so great that they would be out of the range of the National Association. Only the Federal Government, state governments and large manufacturing firms have resources sufficient for this purpose. Experience has shown the wisdom of the plan of the Committee on Medical Research and Therapy in devoting the major portion of its resources to basic investigation, and leaving to agencies supplied with much greater funds, the bulk of investigation on the cure for tuberculosis.

Development of Investigators

The Committee on Medical Research and Therapy gives constant thought to the development of young and promising investigators who will carry on the study of tuberculosis in the future. With this in mind the Association has developed a program for research and teaching fellowships. Such fellowships are granted to graduates of medical schools in this country, who will continue to carry out their work in the United States. Emphasis is laid upon the selection of young men and women showing originality and ambition in re-

search who appear likely to continue to devote major attention to tuberculosis.

Geographic Location of Investigations

The Committee on Medical Research and Therapy of the National Tuberculosis Association has adopted the view generally held among sponsors of research throughout the United States, that geographic location should not be primary consideration in the award of grants. The objective of research grants is to stimulate productive and fruitful scientific investigation wherever the opportunities are best. However, experience has shown that projects deserving support are scattered throughout the nation, and as an actual fact the 22 projects sponsored by the Committee are located in 14 states stretching literally from Maine to California.

Financing of Investigations

Funds for the present medical research program of the National Tuberculosis Association are contributed in part by the National Tuberculosis Association itself, and in part directly by its state and local affiliates. Within recent years the boards of directors of state and local associations have taken great interest in the medical research program, and have enthusiastically supported it. Many of these associations not only contribute to the research program of the Association as a whole by special contributions to the National Association, but independently finance investigations within their own communities. In each case the projects are studied by the Committee on Medical Research and Therapy of the National Association, and approved before support is given by the affiliates.

In essence the research program of the National Tuberculosis Association is designed to develop practical research on the control of tuberculosis through a long series of patient studies on the fundamental nature of the disease and basic principles concerned in its prevention and treatment. The program has led to the publication of more than a thousand scientific articles by investigators receiving Association support.

INTERNATIONAL RELATIONSHIP IN REGARD TO TUBERCULOSIS CONTROL

By BETTY MACDONALD

JAMES E. PERKINS, M. D., Managing Director
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Only since World War II have there been developed serious plans for control of tuberculosis on an international scale. Prior to World War II there were certain attempts at international quarantine and exchange of information as to morbidity and mortality. There was, however, no international governmental machinery to attempt international control of tuberculosis, and the voluntary international anti-tuberculosis agency, The International Union Against Tuberculosis, confined itself principally to conducting periodic international tuberculosis congresses, devoted largely to developments in methods of treatment.

During the latter part of World War II and the early part of the postwar period, the United Nations Relief and Rehabilitation Administration included in its activities tuberculosis case-finding and control, and upon its dissolution, the United Nations International Children's Emergency Fund picked up and expanded UNRRA's tuberculosis control activities so far as children are concerned. The UNICEF program assumed the form largely of mass tuberculin testing of children, with BCG vaccination of those found to be non-reactors. Confined at first to the devastated countries of Europe, this program has been extended by the Scandinavian Red Cross Societies, who are under contract by UNICEF to supervise the program, to the Near East and Asia. BCG for this purpose is produced in and distributed from the State Serum Institute in Copenhagen, Denmark. The program is being extended to North Africa as well, with BCG for this part of the program coming from the Pasteur Institute in Paris.

In the fall of 1948 the Interim Commission of the World Health Organization was replaced by the permanent secretariat of the WHO, in accordance with decisions made by the First World Health Assembly meeting in Geneva earlier in the year. The tuberculosis work of the WHO is being guided by the advice of a committee of nine tuberculosis experts, and the program is being administered by a full-time consultant and his staff, members of the WHO secretariat.

The WHO helps advise the UNICEF in its BCG program, and ultimately no doubt, will take it over. It has arranged for surveys of the tuberculosis situation in several countries, and has given advice as to desirable tuberculosis control programs in those countries based upon the findings of the surveys. It has provided a limited number of traveling and training fellowships to physicians from various countries, particularly those which have serious tuberculosis problems and which have not established as yet control programs. It has also made available to countries, upon request, tuberculosis experts from other countries for advice upon specific tuberculosis problems.

The International Union Against Tuberculosis has been slow to arouse itself from its necessary hibernation during the past World War. The stage is now set, however, for the Union to embark upon an expanded program and to take its rightful place working hand-in-hand with WHO, if its member agencies and secretariat wish to do so. At the 1948 meeting of its Council, an expanded program was approved and established of a full-time executive

director authorized. At the 1949 Council meeting, a sub-committee was appointed to seek suitable candidates for the position of executive director, and extensive changes in the constitution, necessary for the implementation of the expanded program, were agreed upon for submission to the assembly for approval at its first postwar session scheduled to be held in Copenhagen in September, 1950. These changes also clarify relationships between the Union and WHO. Proper integration of the activities of the two agencies is further assured by appointment of the part-time honorary secretary-general of the Union to the WHO Expert Committee, and by the practice of the inviting the tuberculosis consultant of the WHO secretariat to participate in all sessions of the Council of the Union.

Adequate financial support of the Union was pledged by the delegates of the various member agencies at the 1949 meeting of the Council providing a properly qualified full-time executive director is appointed and an expanded, effective program is established.

DR. GEORGE M. COOPER

Dr. George M. Cooper, head of the Division of Preventive Medicine, North Carolina Health Department, honored with a 1949 Lasker Award of the Planned Parenthood Federation of America for outstanding services in maternal and child health and for his efforts in making his State the first in the Union to include birth control in its public health services.

Born in Clinton, N. C., he practiced there after graduation from the University College of Medicine, Richmond, in 1905. He was county physician for Sampson County from 1909 to 1913, and in 1915 joined the State health service. In 1923 he was promoted to assistant State Health Officer and to his present post in 1931.

LASKER AWARDS IN PLANNED PARENTHOOD PRESENTED

The Albert and Mary Lasker Foundation Awards in Planned Parenthood were presented in New York, October

26 to Dr. George M. Cooper of North Carolina and Dr. Carl G. Hartman of New Jersey. Charles E. Scribner, Chairman of the Planned Parenthood Federation of America, made the presentations at the Annual Luncheon of the Federation, held at the Hotel Roosevelt.

Before an audience of 500, chiefly delegates to the Federation's Annual Meeting and representatives of other health agencies, Mr. Scribner read the citation:

"To George M. Cooper, M.D., for his brilliant and humane leadership in establishing birth control as an integral part of the public health service of North Carolina, the first State in the Union to take this step. As head of the Division of Preventive Medicine, he displayed extraordinary talent and vision as organizer, educator and administrator in bringing the benefits of child spacing to under-privileged couples. To him we owe much of the improvement in maternal and child health and family stability."

The cause of the high prevalence of tuberculosis in mental hospitals is failure to recognize or seek out cases of tuberculosis among incoming patients who then transmit the disease to other patients during residence in the hospital. The situation can be improved only by segregating and treating the tuberculous patients discovered by survey.—Waldo R. Oechsli, M.D., *Pub. Health Rep.*, Jan. 7, 1949.

The admission of tuberculosis patients to general teaching hospitals on a more liberal basis than has become the custom would do more than any other measure to improve medical education in tuberculosis. In a teaching hospital the mere presence of a tuberculosis section is of educational value.—Carl Muschenheim, M.D., *Am. Rev. Tuberc.*, July, 1949.

The prevention of irregular discharge begins at the beginning of treatment. And treatment begins at diagnosis, at the time when the patient is first informed that he has tuberculosis.—William B. Tollen, Ph.D., *VA Pamphlet* 10-27, Oct., 1948.

